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## Abstracts plan by BCS group

A QUARTERLY journal abstracting internal reports published by academic, government, and commercial research and development departments has been proposed by a British Computer Society specialist group.

The group, Formal Aspects of Computing Science, hopes to be able to produce the journal, on a non-profit basis, for an annual subscription of about £5. It would like to hear from potential contributors and subscribers, who should write to: The Treasurer, BCS FACS SG, 42 Birkbeck Road, Sidcup, Kent.

APL has been introduced by GEC Computers for the 4000 processor range. The APL Interpreter, which runs under the OS4000 multi-access operating system, was written by the firm's in-house software department.

VIEWDATA was demonstrated in Moscow this week to the Agriculture, Communications and other departments of the Russian government. The Russian-initiated demonstration was given by the Post Office and STC.

## 'Big Brother' council fears—but it's only Prestel

ALARMIST reports in the London Evening Standard and the provinces recently about plans for a "Big Brother" computer link-up for local authorities, have turned out to be about nothing more sinister than Prestel, the Post Office's public information service. The Local Authorities Management Services and Computer Committee has simply proposed that Prestel could be used to help disseminate management information around local government.

Hugh Screen, of Lamsac, told Computer Weekly that the kind of information to be circulated by Prestel would be news of research results for sharing in various administrative fields such as work measurement and O&M, the development of rent collecting systems and the like. There would be no personal information at all, he said. Some of the data could be valuable but certainly not sensitive.

Lamsac at present has a man permanently on the phone answering queries on these subjects, Screen said, and it would be much cheaper and more efficient to have the data available on the Post Office's dial-up service, possibly as a closed user group.

## Mixed reactions to NEB office venture

THE National Enterprise Board's venture into the office systems market was launched officially last week, and christened Nexos. As expected, Logica is the only associate company involved so far (CW, October 12, 1978). Further firms in the peripherals field are expected to join Nexos in the next few months.

The news was warmly welcomed by David Cockcroft, research director of white collar union Apex, who has been urging the government to put money into office systems to keep the UK ahead in the technology stakes.

On the other hand, Michael Grylls MP, vice-chairman of the Conservative Party Industry Committee, said he thought the venture was unlikely to be successful as the NEB was starting

from scratch in a field in which it has no experience.

The project was liable to be damaging to the economy, he said, as it would divert resources, in the form of skilled executives and engineers, from the private sector. It would be better, Grylls insisted, to give grant aid to existing firms such as Logica, rather than set up a new shareholding.

Ex-IBM man Muir Moffat is managing director of Nexos. He will be working with an initial investment of £15 million, with a further £25 million available for further development.

Logica is setting up a separate company, Logica VTS, to handle its growing word processing business, in which the NEB will have a majority interest.

It is this firm that will be Nexos's first associate, handling production and development of word processors, while Nexos is responsible for marketing and support. Logica's existing stand-alone word processor, the VTS 100, will be Nexos's first product, carrying both trade names.

Details have also been announced of the Logica group's financial restructuring. As expected (CW, July 6, 1978), Logica group staff are to have a 51% stake in a new holding company, with the NEB taking



Muir Moffat, managing director of Nexos, will be working with an initial investment of £15 million.

20%. International investors, predominantly European, will be offered the remaining 29%.

The new company, Logica Holdings Ltd, is incorporated in the UK and has Philip Hughes as chairman, with Len Taylor as managing director.

### Two new versions of Pet announced

AMONG new announcements being made at Microsystems 79, in London this week, is the introduction of two new versions of the Pet computer, together with a printer and a floppy disk system.

The new Pets are the 2001-16N, 16K byte system, and the 2001-32N, 32K byte machine. Priced at £729 and £858.80 respectively, they both feature a typewriter style keyboard that supersedes the original keyboard and cassette unit.

### US TV station writes viewdata software link

SOFTWARE which will marry the UK teletext broadcast and viewdata wire systems of displaying text on adapted TV sets, is being written by a US TV station, KSL-TV in Salt Lake City. Texas Instruments Tiflex decoders, developed in the UK, are being used in the experiment, which KSL hopes will enable it to store and edit news agency copy on its in-house General Automation 18/440 mini.

### Amdahl bid

AMDAHL Corp has launched a counter-bid for communications processor specialist Comten of St Paul, Minnesota. Last week Comten agreed in principle to a takeover bid from NCR which valued the company at \$125 million (CW, January 25). The Amdahl bid of \$138 million throws the field wide open.

### Out of action

EXPLOSION at the computer installation at Queens University Belfast, on January 21, looks like keeping the ICL 1906S and 1904A mainframes there out of action for several more weeks.

### Talisman charges up

CHARGES for the Talisman settlement system just announced by the Stock Exchange will probably be disputed at annual meeting of members in May, according to one of its most vocal opponents of the man, Simon Knott of brokers Greene and Co.

The charges are significant higher than those proposed early 1977 (CW, April 7, 1977). £500 bargain will cost the 51p and the 10p and 5p while, at the top end of the scale, a £30,000 bargain will cost £14.04 compared with £12.50.

GERMAN firm Manasse has become one of the biggest independent manufacturers of computer printers. Its takeover of the based company Tally, Mannheim has bought about 10% of the stock.

BCS data communication specialist group will hold annual meeting next Wednesday (February 7), followed by speakers from IBM, DEC and Honeywell describing companies' latest products.

A CROSS-LICENSING covering semiconductor technology for the next generation of Amdahl and Fujitsu computers has been agreed between the two companies.

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### Briefing SDI first for IBM 4300s

FIRST to announce orders for the IBM 4300 is SDI, Software Design, of Bermuda, which is to have two four Megabyte 4341s in the UK and the US.

"We will be using the machines for software development," said a spokesman. "DOS/VSE users will be upgrading to DOS/VSE, and there are sure to be gaps in the new IBM offering that SDI can fill. We also welcome the new IBM software pricing policy which will enable users to choose between a chargeable IBM offering with a chargeable SDI product, where previously we were selling against free IBM software."

Impact of 4300 — Page 17.

### Cut-price words

XEROX in the US is cutting the selling prices of its word processors and increasing the rental prices. The 850 series of display machines is going down in price about 15%, and the older 800 series without display, 20%. Rental prices are going up from 4% to 7% on the 800 line.

### Computastars details

FULL rules and conditions for Computastars 79 are to be published in Computer Weekly next week with the official application form. Already more than 30 companies, many of which will be new contestants, have shown interest and there will be some tough competition for a place in the finals at Crystal Palace on September 29. Preliminary details may be had from Gordon Cairns, Computastars, 1178 High Street, Croydon.

### Insac subsidiary

A NEW subsidiary of the National Enterprise Board's software company Insac has been formed, with Anthony Chander as managing director. Called Insac International, it will market the Post Office viewdata system and then seek software development business for Insac member companies throughout the world apart from the UK and the US.

Chander talks to CW, page 15.

### Cloud over NS 200

FORMAL announcement in the UK this week of the National Semiconductor 200 series 16-bit microcomputer is being made against continuing litigation over patent and anti-trust violations between the company and Digital Equipment. The 200 series is software and I/O compatible with the DEC PDP-11/34, and deliveries are due to start before June.

### Threat to PO

Threat of strike action hung over the Post Office this week as unions considered regarding proposals for DE staff (CW, February 1). A Computer Weekly went to press members of the Society of Civil and Public Servants were ready for further strike action if the result of the meetings was not satisfactory.



Wilson... procurement preference to truly European suppliers.

## European preference gets thumbs down

A CALL by ICL managing director Dr Chris Wilson for an EEC member governments to give preference to European-based mainframe manufacturers in computer procurements has received the thumbs down from Dr Christopher Layton, head of the EEC Science and Technology Directorate.

Dr Wilson made the call last week at ICL's annual general meeting. He made an impassioned plea for EEC countries to co-operate in reducing the dominance of US based computer suppliers in the European market.

Dr Wilson said "ICL is looking for a European policy which gives procurement preference to truly European suppliers, which covers the whole range of products and services, which extends the defined public sector market and which can be adopted by all EEC countries."

Asked to comment on Dr Wilson's proposals about procurement, Dr Layton told Computer Weekly that ICL had already talked with the Commission about the feasibility of such a policy, but the Commission believed that it would be "out of the question" to force member governments to buy only from European-based firms.

Dr Layton said it would not be out of the question for the Commission to adopt a policy similar to the West German government's existing policy of "encouraging" public bodies to go to European-based manufacturers for their systems if all other factors were equal. Procurement authorities in the various member countries could help by exchanging information about such systems.

At the same time joint development programmes and increased standard-

sation could encourage member governments to buy from European-based companies.

Two years ago the EEC adopted a directive which in 1981 should overrule all national policies that support home based computer manufacturers by giving preference to them in procurements for government installations. The directive will open the way for full open tendering on all public contracts.

If ICL's proposal were accepted by the EEC, then member governments could only buy mainframes from ICL, Siemens and, possibly, CII-HB.

Such a policy could prove extremely beneficial to ICL, since Siemens and CII-HB have no presence in the UK mainframe market while ICL is well established in both West Germany and France.

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Layton... policy similar to West Germany's is possible.

## Strikes will hit all govt centres

NEARLY all government computer centres will be brought to a standstill on February 21 as the Civil Service strikes.

In response to the threat of a CSD spokesman said, "We are aware of the situation and contingency plans have been laid to tackle the stoppage." When asked why the CSD had not reacted with any pay offer on the basis of PRU results, which union sources say match its present claim, the spokesman ad-

ded, "Not all the results are in. They should be completed by next Wednesday."

In continuing the government's reluctance to be bound by the PRU conclusions, in line with a national agreement signed by both sides, Gerry Gillman, general secretary of the CSD, said, "The results of the PRU comparability study are available now. The wages explosion

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Turn to page 14

## Mystery shrouds £70m of analogue export claim

SERIOUS doubt is cast on the reliability of Department of Industry statistics on the computer industry and the Department of Trade overseas trade statistics which show a massive increase in exports of analogue and hybrid computers between

1977 and 1978, which cannot be accounted for.

The latest set of DoI statistics includes figures from Customs which shows that exports classified by export agents on bills of lading as analogue or hybrid computers increased from less than £3 million in the third quarter of 1977 to more than £20 million in the third quarter of 1978.

Statistics from the same source now available from the Department of Trade for the whole of 1978 state that analogue and hybrid computer exports amounted to a colossal total of nearly £73 million

Turn to page 4

## COMPUTER WEEKLY'S INSIDE NEWS

Success of the Microsystems 79 conference and exhibition once again highlights the importance of microelectronics to industry and society. Martin Banks and Gareth Jones report on the event. Pages 12/13	12
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JOB OPPORTUNITIES: PAGES 20-63. SCOTTISH JOBS: PAGES 20-24











# MICHIE'S PRIVATEVIEW

*It's quite easy to believe the impossible.....*



THE White Queen admonished Alice to believe three impossible things every day before breakfast. It sounds difficult, but is actually quite easy.

You just have to be careful to choose things which plenty of other people already believe, such as that Brand X washes whiter than white.

The hard thing to believe is not the impossible but the unbelievable. This is how I have always understood the story about the old lady in the Giraffe House of the Zoo.

When she said "I don't believe it!" she was obviously not complaining that the animal in front of her was impossible. Her difficulty lay in finding a way of fitting the apparition into her existing knowledge about the world.

Even the addition of new information to memory is conditioned by what is already there. Unless a compatible body of pre-existing belief is already present to provide "hooks", so to speak, on to which the new item can be attached, chances of assimilation are slim.

I once gave an American

house guest a copy of Brian Randell's book "Alan Turing and the origin of digital computers" (Machine Intelligence 7, 1972). This paper revealed for the first time that high-speed electronic computers had been operational in Britain under war-time secrecy some years before the US post-war invention of Eniac.

Next day my guest enthused about the paper, so I innocently asked him if he had learnt anything new from it. "I certainly did!" he replied, but then trailed off vaguely.

Since there was absolutely nothing in his pre-existing structure of knowledge and belief into which the new fact could be fitted, what had happened was only what cognitive psychologists would predict: lacking a hook, the new material had failed to be transferred into long-term memory.

People say of such a case: "There's none so blind as those that will not see!" but they miss the point. However hard a man tries to memorise, if previous memory contents are not set appropriately he is

likely to fail.

Even with "seeing", unless large bodies of visual knowledge have already been amassed, a man in possession of healthy eyes will not "see" what is in front of him.

Partly, these problems of perception and belief are no more than the difficulty of fitting things before you have established file categories for them. Partly they may be related to the fact that our species evolved in slow-changing environments which put a low premium on the ability to assimilate drastically new experience.

That is why I and others tighten seat belts as information technology remorselessly accelerates, hoping that the pilot and navigating staff in the Cabinet Room are taking in what is happening with appropriate alacrity. For it is not only belief and memory which are disabled if mental models are not updated fast enough. Comprehension itself, which should be the tap-root of remembering and believing, can utterly fail, however simple the basic facts seem to be.

Let me illustrate by uttering an assertion designed to be 1. Impossible to understand; 2. Impossible to remember; and, 3. Impossible to believe.

Assertion: Most academic scientists who discover things of use to industry are making the most un-patriotic possible use of their time and talents.

This appears to be dangerous nonsense. Indeed it would be dangerous nonsense if (but only if) a certain old-fashioned assumption of UK economic life still held, namely:

Assumption: Annual investment in new processes and plant is sufficient to absorb the existing rate of domestic innovation.

When Sir Alan Cottrell retired as chief scientific adviser to the Cabinet he published a number of analyses to explain why the boost to British R&D from Tony Benn's "white-hot technological revolution" had no perceptible effect on the modernisation of industry.

Our national rate of annual investment in industry of six to seven percent is so low relative to other nations (Japan's is over 30%) that there is no prospect of incorporating even the numerous innovations and discoveries lying around already, let alone picking up the new stuff.

The latter, however, can perfectly well be picked up from the open technical literature by other nations, so that UK-based brain power ends up fuelling the industrial engines of our competitors.

Cottrell's facts have not been disputed. So possibly at length the penny will drop. Meanwhile I draw a humble, and perhaps reassuring, moral for one of the UK's more promising foet of innovation.

Robotics is now to receive encouragement from a number of government agencies. Here at least there has been little pipe-dreaming about renovating UK manufacturing with UK-made robots.

With present investment rates this can't be done. But there is a lively awareness of the possibility of a new light manufacturing industry for the UK geared to sell robots to the heavy industries of the rest of the world.

## SOFTWARE FILE

### Enhancements to Com-plete include remote support

WITH the latest release of its Com-plete TP monitor, Adabas Software is able to offer remote software diagnosis not only to users of Com-plete but also to users of the Adabas database management system.

The release, Version 3, in addition enhances many of the functions and facilities of the monitor and its integral program development system.

The remote support capability gives Adabas software engineers immediate access to installations that can provide a dual-up teletype port on their 370X or compatible transmission control unit. Almost any software problem can thus be investigated quickly without the need for a site visit.

Among entities that can be examined are memory and memory dumps, JCL, user programs, control blocks, and system queues. Security mechanisms are included which prevent unauthorised access to the user's data.

The facility is implemented as an integral part of Com-plete Version 3, but can also be installed at sites which have Adabas alone.

One of the major enhancements to the monitor itself is native mode VSAM support, eliminating the need for special calls. The release also increases the maximum thread size (to 252K) and provides activity-based thread scheduling to improve performance.

Other enhancements include additional debugging facilities for high-level languages; new facilities for cold, warm, and hot restart; and new device support.

### George 3 specialist company formed

A NEW company formed by Gandlake Computer Service is to specialise in enhancements to the George 3 operating system. Called George 3 Systems Programming, its first offerings consist of George 3 modifications and a range of related systems software packages.

Among the modifications are a greatly enhanced SETPARAM command, providing eight new parameters, and a new facility for controlling MOP access, by limiting the number of low status MOP users logged on. Two further modifications permit the commands LOGOUT

### Release of RPL sub

A REPORT generator subset of its RPL language has been introduced by Filelab Support Services. Called Sprint, the package runs on DEC PDP-11, LSI-11, and IBM System 3 processors.

Like RPL, Sprint Producing Reports fully complies with Filelab, but it is a much simpler language, the major application being to produce reports and forms.

A promisingly made with the reports in the UK, the package has been developed by Filelab, which is a subsidiary of the IBM Corporation.

Another company, Filelab, has developed a new RPL language, called RPL-2, which is a more powerful construction

## SOFTWARE FILE-2

### Speed is the key in Sligos interpreter

AN IBM-compatible APL system for the Digital Equipment DECsystem 10 has been developed by CAP's French software house partner Sligos. Called APL-S, it is being used by Sligos to support a time sharing service and will be accessible via the public packet switching network

#### SOFT BITS

### Compeda's first sale

THE NRDC's Compeda subsidiary has won its first customer for PDMS in Constructors John Brown Ltd. CJB has signed a full access licence contract and is collaborating with Compeda on the further enhancement of the system.

BRITISH AEROSPACE, Plessey, and the CEBG have been among the first customers for a new in-house course on Mascot which is run by Systems Designers on clients' premises.

PAYROLL and accounting package services have been added by Southwark Computer Services to its interactive time sharing system. Based on the bureau's Digital Equipment PDP-11/70, the software can be accessed either via dial up telephone or by direct line.

MAILING lists can be handled on the Hewlett-Packard System 45 desk-top computer using a software package called List Management. It occupies 64K bytes of RAM and enables the user to enter names, an address, sequence, delete duplicate entries and add, change or delete data. It can also handle label preparation and printing.

## PROGRAMMER NOTES

### 'Basic not easier to learn than Algol-type language'

FRESH ground has been broken in the long-running dispute over the virtues and deficiencies of Basic.

The latest combatant, E. W. Watson (Letters, January 18), shifted the area of battle to the dual questions of standardisation and the ease with which the language can be learnt, while also losing some barely concealed barbs into the academic camp.

Now battle has been joined again by J. A. T. Maddison, of Thames Polytechnic, with his third contribution on the subject.

Maddison begins by noting that he never intended to imply that the common use of interpreters gives Basic any superiority, a point that he made forcefully in his first letter (Letters, November 18, 1978). He goes on to question the advantages claimed for the language by Watson.

"I must admit that I am coming, through experience, to rate ease of writing non-trivial programs and ease of reaching a sufficiently high probability that they are correct above ease of learning a language.

"However, having taught both, I feel that, as a language, Basic is not significantly easier to learn than an equivalent subset of an Algol-type language.

"The need to control the algorithm to fit Basic's control structures balances the traces of more powerful constructions

## EDITED BY PETER HEWITT

### BS drafts published

DRAFT British Standards for both Coral 86 and RTL/2 have now been published by the BSI. Public comments have been invited and should be sent before February 28, 1979, to P. S. Wallis, Secretary to DPG/13 British Standards Institution, 2 Park Street, London, W1A 2BS. In the case of Coral, the draft is also being circulated by the International Standards Organisation (ISO) which has accepted the language as a candidate for standardisation. The intention is that the UK and ISO standards should be technically identical.

Copies of the drafts are available at £1.50 each (£1 to BSI members) from the General Office, BSI, 101 Pantoville Road, London, N1 5ND.

### Free overview of library

AN overview of the process design software library it can offer to chemical engineers is provided in a new information pack produced by the Computer Aided Design Centre. Among major systems outlined are Multicol, Economist, Concept, Keydata, and Symbol. Copies are available free of charge from the Process Industries Group, CAD/C, Madingley Road, Cambridge.

### Sharp expands APL service possibilities

NOVEL distributed processing possibilities have been opened up for users of the I. P. Sharp APL service with the introduction of an interface to IBM 5100 and 5110 desk-top computers. The facility allows any 51X0 system equipped with the serial I/O adaptor feature to sign on to the Sharp network as an intelligent terminal.

While so linked, the joint system supports two concurrently active APL workspaces: one on the 51X0 "guest" processor, and the other on the Sharp "host". Data, APL objects, and entire workspaces can then be exchanged between the systems.

One example given by Sharp is the passing of guest-entered

data to the host for processing, perhaps in conjunction with a public database. Results would subsequently be returned to the guest system for further analysis or formatting and printing.

More intriguing possibilities are raised by the facilities for passing control. A complete workspace, for instance, can be transferred from active or passive storage on one system to any desired location on the other.

A network can thus be supported in which any Sharp APL user can submit requests for processing on a guest system.

### Payroll suite

A PAYROLL package written in Hewlett-Packard extended Basic is being marketed by Dunlop and Badenoch Computer Services. Designed for hourly paid staff, the suite includes full invoicing and sales ledger facilities. The firm is also implementing the package in Dibat for Gamma's Olympic range.

# CICS users speak highly of OLIVER.



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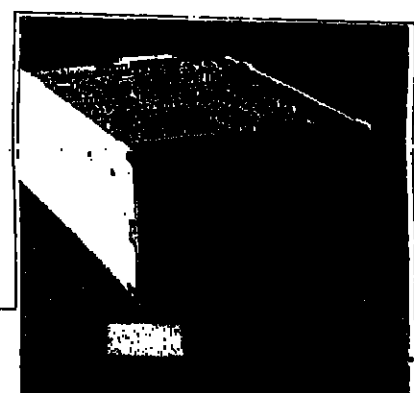
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The FD650 is a double-headed disk drive which reads and records data on both sides of IBM Diskette 2 or 2D or equivalent media. The drive unit is capable of both single and double density operations (using for example MFM encoding). In the double density mode, it provides an immediately addressable unformatted storage capacity of 1.6 million bytes. Track-to-track access time is just 3 msec. Head load time is 35 msec and track settling time is 15 msec.

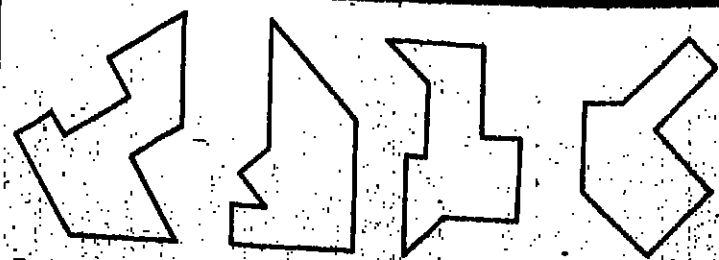
The FD650 offers accurate head positioning, uses rugged die-cast construction with an electronically locked door protecting the media while in operation.

Interfacing is simple, the unit being compatible with the proposed ANSI standard. All electronics are incorporated onto a single PCB using C components - which means no worries about either spares or servicing. Trust Perdec to make such a sophisticated unit so simple!

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### Puzzler



EACH of these four diagrams has been formed by placing together edge to edge, two exactly identical shapes. Can you separate the two straight lines. See page 61 for solution.



## For managers recruiting staff, TOPS offers a golden opportunity

THE Training Opportunities Scheme (TOPS) operations course which started at Borehamwood College in Herts on February 5 has some 26 students.

And, as I mentioned in Op Spot some time ago, after 11 weeks at the college the students are sent to sites in the industry for a fortnight's practical block.

That period provides a golden opportunity for operations managers who are looking to recruit staff at trainee and junior operator level. Derek Pinnock, who organises and runs the TOPS operations courses at Borehamwood College, told me:

"Ideally, we look for sites which are near the homes of the students. Problems tend to arise when they come from rural areas or when we have several from the same town. On this

course, for example, we have five students from Luton, so it might be difficult to place all of them."

"Any operations manager who would like to accept a TOPS operations student for the practical part of the course, should contact Derek Pinnock at Borehamwood College on 01-953 6024.

"To insist that operators receive pay increments with every new piece of equipment installed in the computer room is to reduce the operations department to little above factory level."

"And such a proposal would be extremely difficult to implement, anyway, as many large

companies and universities have several sites and the operators are paid a salary in accordance with grade, and not the size or complexity of the installation."

Such are the views of an operations manager who contacted me in response to an Op Spot piece (CW, January 18) in which I suggested that operators should be informed about software and hardware enhancements, and be paid accordingly.

Well, in the short time that has elapsed since I wrote that piece my views have not changed.

## Additional work and knowhow should result in better pay

## And now, the IBM OS initiator

## Don't abuse VM/370 messages

IBM VM/370 supports a large number of remote users, each of whom runs his work under his own operating system. In such an environment the master console operator plays a vital role, keeping all users up-to-date regarding the state of affairs in the computer room. They communicate with each other via the VM/370 message command.

There is a danger, however, that the message facility will be over-used or abused and, therefore, wasted. And, if that is the case, it might cause a breakdown of communication between the operator and the user.

These points are raised by Richard Post, a former operator who is now employed in the TP section at the Nottingham site of East Midlands Electricity Board.

Says Post, "Our system is an IBM 370/158 running under VM/370 with OS/VS1 and Channel Subsystem. The facility should be used to convey one-way information. For example, when the engine room breaks in service well before it actually takes place. According to Post, VM/370 also has a message facility which has a higher priority than the message input by the master console operator. He says that it should only be used in an emergency.

In past Op Spots we have discussed various aspects of the IBM OS operating system, including the reader prompt, which is responsible for the work on the system; queues, and the writer prompt, which transfers data to the output queues to the appropriate devices.

Now I would like to discuss the IBM OS initiator, the system which selects from the input queues, editates and de-allocates storage and other resources in accordance with the needs of each job.

IBM OS supports up to 10 initiators. An initiator will select many as eight job classes for the needs of a job at a time.

The OS command to start an initiator has the following format:

S Procedure name, Initiator, Job classes

The following command starts an initiator processing INIT, to serve job classes B, C, D and E. It is given identifier denoting those jobs so that the operator may use OS display command to select from which input queues selecting jobs.

Once the command has been processed, the initiator selects jobs from classes B, C, D and E, in that order.

Installation standards permit the operator to force a patching priority on all jobs it selects. (The dispatching priority determining which program will get CPU time in a competitive situation. For example, the highest and the lowest priority programs.)

The following command starts an initiator to establish a patching priority of 5 for all jobs it runs:

S INIT,INITB, (B) 5

It is also possible to dispatch priority of all jobs selected by an initiator. The following command is used:

S INIT,INITA, (A) 5

## Dual-speed terminal introduced for Mark III users

A DUAL SPEED intelligent terminal designed for use with the Mark III time sharing service and built around Honeywell Level 6 minicomputer hardware has been introduced by Geisco, the new company formed to run and market the service. Called the 3/24, the terminal is designed for four applications. In data entry mode, it provides a means for collection and validation of large volumes of transactions. Listing and copying of files are supported by a set of utilities.

In low-speed interactive mode, it communicates at 30 chps for program development and financial analysis on Mark III and, in high speed mode, it offers facilities for batch transmission at 240 chps.

The terminal comprises the Level 6 processor, at present a 6/30, but soon to be replaced by the bit-slice 8/23; two diskette units, one for system software and the other for batching data prior to transmission; a VDU; and a 240 lpm printer.

Developed by Honeywell at Honeywell, the software is in line with the industry trend towards productivity and ease of use, presenting the operator with a menu of options from which to select. Although the terminal is offered as a fully configured hardware-software package, a key attraction is that it will run on any model of the Level 6 mini line, making it of particular interest to Mark III users who have or plan to install Level 6 minis for other applications.

The terminal costs £12,700 to buy, or £390 a month including maintenance on a three-year contract. It will be announced in continental Europe shortly, but there are no immediate plans to introduce it in the US where another new terminal system

TO help it track the progress of jobs through its factory, engineering component manufacturer Lanason of Cheddar, Somerset, has installed a Kienzle 2000 visible record computer.

Job costing information is now prepared more quickly and it covers seven basic cost centres in the manufacturing process.

## Kienzle speeds job costing

## Gamma launches PDP-11 based online control pack

A POWERFUL online production control package that runs on Digital Equipment PDP-11 machines has been announced by Gamma Associates. Called Concept, the package was developed for Gamma by Concept Computers Ltd of Guildford, Surrey, a firm that plans to produce similar packages for other makes of minicomputer.

Facilities provided by Concept cover inventory management, product data control, manufacturing order management and planning and scheduling. Concept has been structured on a multiple level basis and the basic Level 1 package, which costs £15,000, can be enhanced with additional modules as required.

The development of Concept, which cost £80,000, was financed by Gamma Associates and liaison with Concept Computers on the project was handled by Gamma Software, of Thames Ditton, Surrey, the firm that procures software packages for marketing companies in the Gamma Group.

Under its agreement with Concept Computers, Gamma has exclusive world-wide marketing rights to the Concept package on DEC machines and will pay a royalty to Concept Computers each time it sells the package.

Gamma anticipates that DEC itself will be interested in the package for its own end users.

The seven-man team at Concept Computers shares a great deal of experience with computer-based production control systems, and the firm's managing director, Colin Meador, said there was nothing to stop his firm producing versions of Concept for other minis. At the moment, however, Concept Computers was too busy supporting and enhancing the DEC version.

Demonstrations of Concept for interested parties will take place on February 14 at Wokingham, Berks and Castle Donnington, Notts.

£2m sales after four months

SALES of IAL's Stratus multi-microprocessor communications control system reached £2 million only four months after its launch at the Farnborough Air Show (CW, September 7, 1978).

Although Stratus was designed primarily for use in air traffic control, the first orders for the Zilog Z80 and Intel 8048 based radio and telephone switching system have all come from police and defence organisations, most of them abroad.

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## Gumbria grows with ICL

FIVE Cumbrian local authorities are to improve their computing capabilities with the installation of ICL 2900 and 1500 equipment.

Cumbria County Council is to buy an ICL 2900 worth £750,000 to handle the full range of local government applications, while Carlisle City Council and Copeland Borough Council have each taken delivery of an ICL 1503 and two 1501 minicomputers. Allerdale District Council has installed three 1501s, and Eden District Council, one 1501.

## Managers' bonus—ASTMS steps in

SENIOR managers at ICL, still unhappy over the fact that they will receive less of a bonus from the latest productivity scheme (CW, November 30, 1978) have asked the Association of Scientific, Technical and Managerial Staff to take up their case.

The recently agreed scheme is directed more at the lower-paid workers in ICL, who have in the past received proportionately less from the deal.

"We are basically in agreement with the proposed productivity scheme," said Tim Webb, national officer for ASTMS. "and in talks with the company it has not been unsympathetic to the managers' position. What we are essentially looking for is a safety net — some degree of protection for them."

ICL would not comment, saying that it was a matter between the union and the company.

## Now it's as easy to buy an add-in memory board as a can of beans.



Guess who are the world's No. 1 add-in memory people? The answer... wait for it... is Intersil. With over 2 billion bytes of memory for mainframe and minicomputer shipped in the States. So who else but Rapid Recall the world's no. 1 distributor could make you an offer like this?

We'll supply Intersil add-in memories ex-stock that are totally compatible for Nova 3 and DEC PDP11. Superlative quality product. Up to 64k words on a single card for DEC. Up to 128k words for Nova. Burnt in. Tested. Guaranteed for a year. All this at prices that are really something special (would you believe £928 for a 32k word card?) A full range in stock now.

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## MAY 8, 9 and 10, 1979 Centre Rogier International, BRUSSELS

IN ITS FOURTH YEAR, this specialised exhibition of small computers, computer peripherals, software, systems and aids to computer efficiency again presents a major opportunity to sell in the most highly industrialised and heavily-populated area of Western Europe. Acclaimed as the major event in the fast-expanding field of mini and micro-based systems, Compec Europe attracts an ever-increasing audience with the need and authority to buy.

COMPEC EUROPE is sponsored by the leading United Kingdom computer publications, "Computer Weekly", "Data Processing" and "Systems International" with the support of "Electronics Weekly" and "Electron". To exhibit at Compec contact the organisers, Iliffe Promotions Ltd, Dorset House, Stamford Street, London, SE1 9LU, England. (Telephone: 01-261 8437 and 8438. Telex: 25137 BISPRS G)

Operators often find it difficult to view. Well, Op Spot, the new weekly computer magazine, has your answer. It's a new kind of computer magazine, one that is easy to read and understand. It's a magazine that is written by people who know what they are talking about. It's a magazine that is written for people who want to learn more about computers. It's a magazine that is written for people who want to stay up-to-date on the latest in computer technology. It's a magazine that is written for people who want to improve their skills as computer operators. It's a magazine that is written for people who want to make the most of their computer investment. It's a magazine that is written for people who want to get the most out of their computer. It's a magazine that is written for people who want to be the best at what they do. It's a magazine that is written for people who want to be the most successful. It's a magazine that is written for people who want to be the most powerful. 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## PEOPLE AND EVENTS

## Reorganisation of Logica Group

CHAIRMAN of Logica Holdings, the UK company which will own the Logica computing and consulting companies, is to be Philip Hughes. Len Taylor is to be managing director. Hughes and Taylor have been senior directors of Logica Nederland BV and Logica Ltd since the companies were formed nearly ten years ago. Peter Harbridge and David Mann have been appointed chairman and managing director respectively of Logica (UK). Previously Harbridge was director of operations and Mann was director of the Advanced Systems group.

Further changes involve the establishment of Logica VTS, the word processing division of the company. The managing director will be Gordon Olson, and Pat Coen is to be chairman of Logica VTS. Olson was previously manager of Logica's computer control division. Other appointments within Logica VTS include those of five sales and marketing executives. Alan Ball, formerly a systems manager with North Yorkshire council, Tom Buckley, Jeff Thomas and Tony Diment who used to be general manager with EMI Audio Visual services. Diana Duggan was previously general manager of manage-

ment services in the British Airports Authority. David Stubbs, a recent graduate, becomes a market research executive.

Allstair Crawford has joined Rediffon Computers as senior territory manager for the South-East branch. He was until recently senior territory manager with Burroughs. David Porter has become a senior systems analyst for the London branch. He was formerly a systems executive for ICL.

Harry Richardson has joined Informatics (UK) as systems engineer for the company's Accounting IV integrated financial software applications.



Duggan



Busche



Christopher Morgan is the winner of the 1978 Young Engineer for Britain award. The competition, first launched in 1977, was organised by the Department of Industry and drew support from international organisations including ICL, Ferranti and SPL International, whose managing

director David Rodway presented Christopher with SPL's prize of a £1,000 travel bursary. Pictured here at the finals at the NEC in Birmingham are (left to right) Sir Monty Finniston, Christopher Morgan, Lady Finniston, N. Tappenden of Post Office Telecommunications and David Rodway.

## Irel appointments

Lorenzo Bosio has been appointed vice-president of Irel International with responsibility for the Mediterranean region covering operations in France, Italy and Spain. He was formerly general manager for Irel Italy. Klaus Busche has been named

as vice president, staff marketing for Irel International after working as director of leasing and broking for the company in London. Vice-president and general counsel is Edward Kling, who joined the company from the Los Angeles law firm of Buchalter, Nemer, Fields and Christie, where he was head of the International Law department.

## Ayres to head new company

PORTABLE MICROSYSTEMS is a new company which is to specialise in the field of portable computer equipment, with a full range of products and services. Mike Ayres, founder of the company, was formerly a marketing manager with Plessey Microsystems. Portable Microsystems made its first public appearance at Microsystems '79, and is based at Brackley in Northamptonshire.

Hugh Findlow has become sales manager International for IAI Data Communications. He was formerly responsible for IAI Medius data network management system sales. Taking over as data communications sales manager is Keith Sutch, who was previously in charge of IAI's data transmission equipment, and Reg Dodge will continue to be responsible for sales of the division's manufactured aviation communications equipment.

Andy Galtry has joined Cambridge Evening News as manager of its new DEC PDP-11/60 computer. He was previously a senior systems analyst with Portsmouth and Sunderland Newspapers.



Ayres

Sharpe

Richard Sharpe has joined ICL as sales director. He was previously distribution manager at ICL's headquarters in Oxford.

## Soccer

A MEETING to discuss this year's Summer Computer League is to be held on February 12, in the room, Dorset House, Strand, London WC2R 1JH, between 5.30 and 7.00pm, and all companies wishing to enter teams must be represented along.

## DIARY

**FEBRUARY 13**  
Systems thinking. Brian O'Brien, BCS Reading branch, ICL building, Lovers Road, Bracknell, 20.00.  
Computers in X-ray scanning - a breakthrough in diagnostic medicine. B. I. Walmley, BCS, Fairfield Hall, Croydon, 19.15.  
Future developments in information systems. K. Smith, BCS, Portsmouth Management Centre, Portsmouth, Hampshire, 19.00.  
Computer aided design of printed circuit boards. R. Bennett, BCS Harlow Sub-branch, Harlow Technical College, Harlow, 19.30.

**FEBRUARY 13-14**  
Meeting, IBM CUA Small Systems group, Holiday Inn, Slough, 14.00.

**FEBRUARY 14**  
Planning for the 1981 census. Donham, BCS Local Government group, 1.30pm, 3 Buckingham Gate, London SW1 4JH. Limited attendance. Contact secretary on 01-828 2333.  
Word processing. BCS N. London branch, West Lodge Park Hotel, Cuckfield, 10.45.  
Talking to the computer. W. Henshaw, BCS Bristol branch, Institute of management services, St Vincent Rocks Hotel, Clifton, 10.15.  
Visit to NW Gas. BCS Manchester branch, Altrincham, 10.00. Limited numbers. Contact R. Baker on 061-828 3471.  
Film evening. BCS Teesside branch, The Polytechnic, Middlesbrough, 19.00.

**FEBRUARY 15**  
Public policy for microelectronics. N. Kingsley, BCS London branch, Waldorf Hotel, Aldwych, London, 18.00.  
First time users - exploited innocents or obstinately ignorant? M. A. Jones and Ian Jones, BCS New or Potential users group, Heath Park Hotel, Hemel Hempstead, 19.30.  
Microcomputers - the electronic accountant? D. Waller, BCS Coventry branch, ICA, Warwick University, Coventry, 19.30.  
Computerized tomography. J. J. K. Best, BCS, The Polytechnic, Preston, 19.30.

**FEBRUARY 15**  
Meeting, IBM CUA Operating Systems group, 1.30pm, 3 Buckingham Gate, London SW1 4JH.

**FEBRUARY 15-21**  
Getting into computing, for the tributive trades, seminar. Computing Services Associates, Royal Hotel, London, 22.00-23.00.

**FEBRUARY 15-21**  
Workshop control by computer. Leeds branch/British Production Inventory Control Society, Public Hotel, Leeds, 18.30.

**FEBRUARY 22**  
Getting into computing, for the tributive trades, seminar. Computing Services Associates, Royal Hotel, London, 22.00-23.00.

**FEBRUARY 22-23**  
Meeting, IBM CUA Operating Systems group, 1.30pm, 3 Buckingham Gate, London SW1 4JH.

**FEBRUARY 27-MARCH 1**  
Which distributed systems have buyer's forum. Regent Cinema, London. Tel: Clive Smith on 01-828 3471.

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## ICL chief dodges South Africa issue

"ISSUES of a moral type are not a matter for directors of a company" was the reaction of ICL chairman Tom Hudson to a question about ICL's position in South Africa. It was asked at the company's annual meeting in London last week. The questioner, Tim Webb, a national officer of the Association of Scientific, Technical and Managerial Staffs, wanted to know about the risks faced by ICL in concentrating a high proportion of its overseas marketing effort in South Africa as well as about the moral aspects of operating in that country.

Hudson said that ICL was aware of the risks involved in depending on business from South Africa, but pointed out that 80% of ICL's turnover from the African continent came from the Republic.

At the same time ICL was taking steps to withdraw a reasonable proportion of its profits from South Africa to reduce the risk.

Answering a question about productivity, Hudson admitted that ICL was still well behind its US-based competitors, despite the fact that ICL reported a turnover of £15,000 per employee in its last financial year compared with £13,000 the year before.

He said, "We are investing heavily this year in machinery, office circuit test equipment, but efficiency can only be achieved slowly by tens of thousands of decisions."

Asked about the money now being made available by the Department of Industry for microelectronic development projects, and if ICL was taking advantage of this, Hudson pointed out that ICL has appointed a senior manager to talk to the DoI about the possibility of ICL receiving a grant (CW, January 4).

"We are looking for grants, not loans," he stressed.

Noting the absence from the platform at the meeting of Sir



HUDSON... "moral issues not a matter for directors."

John Clark and Mr Parry Rogers, both of Plessey, following that company's sale of all its eight million shares in ICL. Hudson told the gathering that he understood that well over 100 City institutions applied for more than three times the shares available. "This is an excellent sign of the City's confidence in the future of ICL," he asserted.

Hudson's own departure from ICL will probably take place later this year when he is expected to retire as chairman (CW, January 11). His new role will be that of a gentleman farmer in Devon.

## Falling costs

THE rapidly falling cost of computer equipment was the reason given in ICL shareholders by deputy managing director Murray Stuart for the company's policy of not issuing a supplementary financial statement showing inflation adjusted accounts.

Stuart pointed out that the bulk of ICL's capital equipment took the form of computers on rental rather than machinery for manufacturing, and that an ICL study had indicated that the replacement cost of the computers was not increasing.



WHAT is claimed to be the largest milk processing plant in Europe, the TONI Milkmaid in Zurich, operates entirely under a computer control system provided by APV of Crawley, and recently Prince Charles went along to see how this example of British technology works.

The plant produces, in addition to milk, whipping cream, coffee cream, yoghurt with various fruit fillings, ice cream, and desserts. Some 2,600 pieces of equipment, such as valves and pumps, are all connected to the computer, which is a humble Digital Equipment PDP-8. This machine carries out inventory control as well. Prince Charles is pictured sampling some of the combined products of British technology and Swiss cows at the TONI Milkmaid (dairy) in Zurich.

## Low-cost alternative to DEC disc drives

USERS of big Digital Equipment computers could soon be offered low-cost alternative to DEC's RP-04/05/06 disc drives in the form of the MSC-05 and MSC-06 disc subsystems from the Microcomputer Systems Corp, a US firm which has just set up a subsidiary in the UK.

Called MSC Microcomputers (Europe), the subsidiary is based at Sunninghill, Berkshire, and will start selling the disc subsystems in the UK when a legal problem in the US involving DEC's Massbus patents is cleared up.

The MSC subsystems are plug compatible with the Massbus controller, and MSC thinks that it may be sued by DEC for infringing Massbus patents. Anticipating such a move by DEC, MSC has filed a federal suit to invalidate the five patents involved (CW, February 11).

# £1 In February Could Save You Thousands All Year Round.

That's the cost of a ticket to The Energy Show, the exhibition on intelligent energy usage.

Nearly 150 exhibitors will be showing practical - and available - products, systems and services. All designed to reduce your fuel consumption and costs through increased efficiency and conservation. There's been a lot of development work in the last year or so and this will be the launch pad for many exciting innovations. Among the exhibits will be:-

## THE ENERGY SHOW LUNCHES

A series of four special Energy Show Lunches is being sponsored by The Institute of Fuel, to give professional visitors to the Show not only a chance to meet others with like interest in convivial surroundings but also a unique opportunity to hear in person industry leaders talk about their attitudes to energy problems and the future of the industry.

The distinguished speakers are as follows:

- 1) Tuesday Feb 20th  
Sir Derek Ezra, MBE, Chairman, National Coal Board, Chairman, British Institute of Management.
- 2) Wednesday, Feb 21st  
Sir John Hill, Chairman, The United Kingdom Atomic Energy Authority.
- 3) Thursday Feb 22nd  
Sir Denis Rooke, CBE, FRS, Chairman, British Gas Corporation.
- 4) Friday Feb 23rd  
H.B. Greenborough CBE, President, Confederation of British Industry; Past President, Institute of Petroleum; Deputy Chairman, Shell UK Ltd.

Only limited accommodation is available so early booking is advisable. Tickets are available from the organisers at £16.50 each, and will be allocated strictly in order of application.

## THE ELECTRIC VEHICLE ASSOCIATION CONFERENCE

To be held at The Metropole Hotel adjacent to the exhibition on Thursday 22nd, the EVA one-day Conference is for an invited audience only. The conference is entitled 'Electric Transport in the 80's'. Fleet users requiring more details are requested to apply direct to Don Gribble, Secretary, Electric Vehicle Association, 80 Millbank, London SW1. Telephone: 01 834 2388

## The Energy Show

National Exhibition Centre, Birmingham, England

February 19-25th 1979

Microprocessor-based control systems and programmers, waste heat recovery systems, boilers, burners and improved combustion techniques, insulation, solar systems, heat pumps, pipes and wheels, plus the power suppliers and many others.

## PLUS MANY FEATURES

Including The Electric Vehicle Association display demonstrating the six facets of energy saving represented in electric traction systems

## THE INSTITUTE OF FUEL CONFERENCE

Designed specifically for the professional looking for practical ways of cutting energy consumption and costs, each conference session comprises four presentations.

Tuesday 20th am 'Energy Planning; pm 'Control & Instrumentation' and 'Good Housekeeping'.  
Wednesday 21st am 'Insulation; pm 'Alternative Sources'.  
Thursday 22nd am 'Waste Heat Recovery; pm 'Heat Pumps'.  
Friday 23rd am 'Industrial Energy - New Technology'; pm 'Industrial Energy - New Technology (continued)'.

Registration fee: £15 per session  
£25 for two sessions

For complete details of The Institute of Fuel Conference and for the registration form for this and The Energy Show lunches and exhibition, either phone Sue Morris on Tavistock (0823) 4671 or complete this coupon and send it to Trident International Exhibitions Ltd., Abbey Mead House, 23a Plymouth Road, Tavistock, Devon PL19 8AU England.

Please send me the Professional Invitation Form

Name .....  
Title .....  
Company .....  
Address .....

## Liveware Saga



## Euro IFIP themes

COMPUTERS in society and as aids for the analytical and creative mind are two of the topics to be covered at Euro IFIP '79, the European IFIP conference on applied information technology, and the Euro IFIP 79 exhibition, which will take place at the Wembley Conference Centre in London from September 25-28 (CW, August 10, 1978).

The conference will include papers from contributors in Europe and from specially invited authorities all over the world. Major mainframe manufacturers involved in the exhibition include ICL, IBM, Univac and Plessey.

Registration before April 1 will entitle delegates to a £20 reduction on the fee. Details can be obtained from Euro IFIP 79, Box No. 45, Chisland Road, Weybridge, UBA 2PD.

itles provided, processor and memory features, peripherals and terminals available, and engineering support provided.

The guide provides a lot of basic information about each small system supplier listed.

The guide contains several chapters of text aimed primarily at businessmen, and includes explanations of technical matters like the basic features of small systems hardware, upgrading and compatibility, data communications and future technical developments.

The Guide to Word Processing Systems' similarly lists and compares 48 suppliers and 80 configurations from the crowded and confusing WP market. Tables show in some detail the differences in text editing facilities, types of screens, capabilities for upgrading and interconnecting to other gear, training available, and so on.

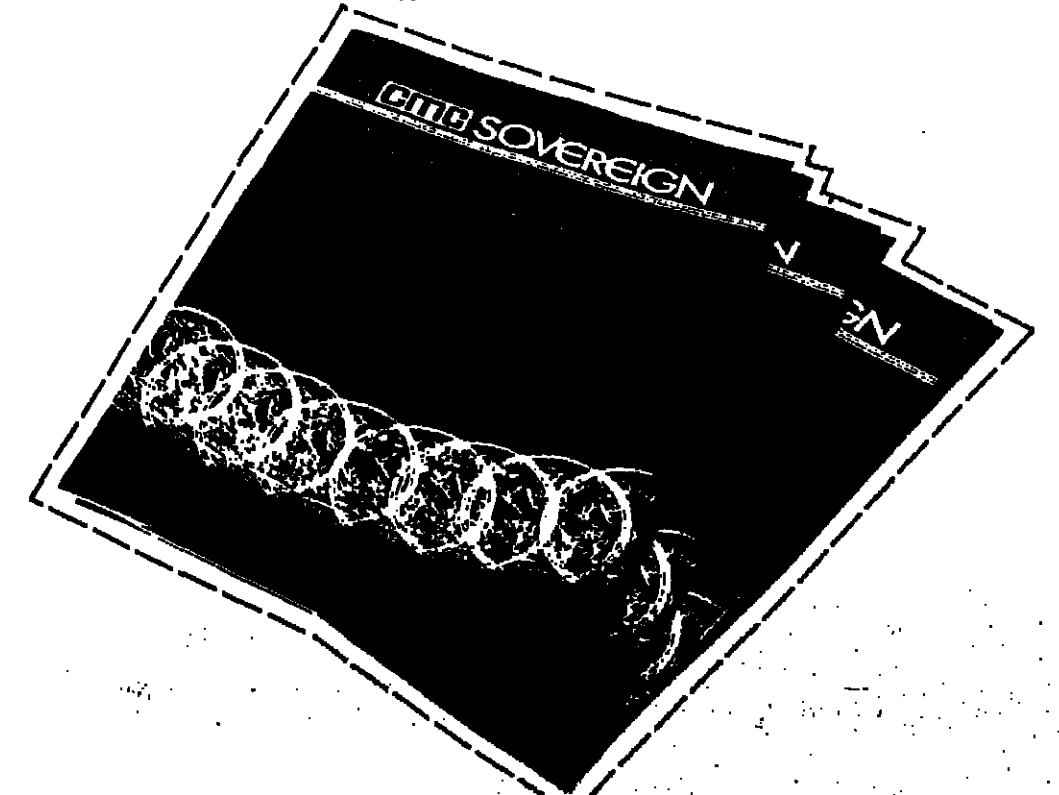
There are also several chapters on the principles of word processing, how to decide whether you need a word processor, how to go about choosing a machine, or a consultant, and work measurement.

A table giving the corporate backgrounds of the suppliers is also provided, to let users judge their likely stability. The list of suppliers, inevitably in this fast-changing market, is already partly out of date, but is by and large admirably complete.

Both guides were edited by Ian Hugo.

\*Guide to Small Business Systems 1979. 100 pp. Guide to Word Processing Systems 1979. 115 pp. Both £24 (£27 Europe) Computer Guides Ltd, 2 Duncan Terrace, London N1 8BJ. Tel 01-279 5511.

# These Sovereigns are absolutely Free



CMC SOVEREIGN is a Multiple Processor (MPK) system in which all the processors are linked by a high-speed power-link called DataWay. This structure makes it possible for each processor attached to the DataWay to handle a different job at the same time without affecting the others. More hardware and software can easily be added by simply hooking further processors on to the DataWay.

The markets in which SOVEREIGN will have particular impact are: high-speed data entry, efficient data base management, comprehensive data communications and high-level language user programs.

For more information about SOVEREIGN please complete this coupon: NO STAMP NEEDED.

Name: .....  
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CMC Data Preparation Distributed Processing Business Systems



# Brisk business at micro show

THIS year at Microsystems, the excitement was a little less, the hustle and bustle a little more restrained and the chances of finding something completely different on the next stand greatly reduced from the total novelty of last year's first show.

At Microsystems '79 "business" was much more the key word. The first day attracted more people through the door than that of the first exhibition, and many exhibitors reported that though the show "felt" quieter, there was plenty of good business being done.

Certainly, the glut of new products and first public showings that were the highlight of last year's event was not going to be matched at the West Centre Hotel this time. But that is not to say that some inter-

esting developments were not on hand.

Commodore, for example, used the show to stake a claim to have the most comprehensive range of systems available from one company. It was showing several new versions of the Pet computer.

Filling in under the existing 8K byte version, Commodore has added a 4K system. This has been available in the States for some time, but is only now being shipped into the UK.

More significant perhaps, given the number of small companies making add-on memory systems to expand the Pet, is the decision by the company to introduce two further versions offering 16K and 32K of dynamic RAM respectively.

To complement the expanded

memory, primarily aimed at the small business market, the two new versions have a completely redesigned keyboard. The integral cassette store unit has been removed, as has the standard "compact" keyboard, and a full typewriter keyboard and numeric keypad have been designed in.

Secondary storage for this system is now intended to be the 2040 dual drive floppy disc unit, also being introduced at the show. Using Shugart SA390 drives, this offers a capacity of 360K bytes on two mini-diskettes. The unit has an integral memory system holding its own 8K byte disc operating system.

Commodore also introduced the 2022 tractor feed printer, a replacement for the original 2021 unit first shown at last year's Hannover show. Considerably better looking than its predecessor, the 2022 offers both upper and lower case Ascii characters, plus Pet Graphics.

Over on the Personal Computer stand, another novel addition to the Apple II computer was demonstrated. This is a light pen, which is supplied complete with appropriate interface for the system. It operates by providing an X,Y co-ordinate number to the bus when the pen is activated, either by a touch sensitive switch, or from software control.

Personal Computers has the pen on introductory offer at the moment, at a price of £165 plus VAT and documentation. With small business systems becoming big business, there were plenty of examples to be seen at the show. One of the newest contenders on display came from Micropower, a Zilog distributor and consultancy company.

The company's new MCBS (Micropower Complete Business System) is based on the Zilog MCZ-1 series of microcomputer boards, a dual drive floppy disc unit and a video terminal, and for a selling price of just under £10,000, comes complete with a wide range of business oriented software, written expressly for UK business operations. Housed in a desk unit, the MCBS provides 60K bytes of



The Pet gets bigger — on the inside at least. This is the new 32K byte version of the system with its "proper" keyboard and no cassette unit. Beside it is the new 2040 dual drive floppy disc system.

## Preview of October launch

GETTING a preview well in advance of its scheduled October launch date on the Research Machines' stand was a new high resolution graphics and memory board. This is a new add-on for the company's 380Z microcomputer system which will provide graphics with a resolution of 319 by 191 points. Each point will have a choice of four gray levels or colours.

Using software also well in advance of its scheduled October launch date on the Research Machines' stand was a new high resolution graphics and memory board. This is a new add-on for the company's 380Z microcomputer system which will provide graphics with a resolution of 319 by 191 points. Each point will have a choice of four gray levels or colours.



John Lamb, marketing director of Comart, carries the company's MicroBox system.

RAM, and 600K bytes of disc storage. The Hazeltine terminal gives 80 characters by 24 lines, and the system is completed by a Centronics printer giving 128 character 132 column print-out at 120 cps.

Fortran, Cobol, Basic and PLZ are the available languages for the system.

A new entrant into the low-cost hobbyist market place came

from HL Audio, showing the EII II microcomputer, which retails for £99.95. Based on the RCA 1802 microprocessor, the system comes in kit form, and is based on a single circuit board that incorporates a hex keyboard and five slots for expansion boards. These include a 4K static RAM board, a prototyping board, and the Giant board, an interface card with two parallel I/O ports and a cassette I/O port.

A Swedish company making its first appearance at Microsystems was Sateco AB which was showing its Databoard 4880 modular microcomputer system.

This is based on a single CPU card and can be expanded up to a complete system incorporating dual drive mini floppy discs and or separate dual floppy subsystems. A wide range of different microprocessor chips can be used with the system without having to change the I/O, memory or bus structure. These are the Zilog Z80, the Intel 8080, Signetics 2650, MOS Technology 6502 and Motorola 6802.

The potential growth of the microcomputer market is also attracting the attention of the UK's leading computer manufacturers. Using this, the company that an information terminal can easily be constructed.

Sateco is currently looking for agents for the Databoard in the UK.

Microsystems 79 was scored by Computer Week sister journal.

## CONFERENCE WARNING TO INDUSTRY

# 'Prepare for great change'—Dol man

"MICROELECTRONICS technology and its applications are central features of industrial strategy." This statement by J. Anderson, of the Department of Industry's Electrical Applications Division, in his opening address at the Microsystems 79 conference, was tempered by a warning that industry must be prepared for great change. Even if technological development were frozen it would take 10 years to catch up with potential applications, he declared.

UK manufacturing engineers did not always apply new technology as quickly as competitors and consequently missed out on the opportunities for new products and the UK risked becoming the "fall-end Charlie" of Western Europe, Anderson said.

The conference programme aimed at providing designers, managers and hobbyists with a review of what is happening in microtechnology, its applications and the effects on organisations.

For example, Chris Blake, Trivector Systems, examined the new skills necessary to use the technology and the effects on company structures.

The main criterion for using a micro was cost, not only the component cost but also that of commissioning, ownership and reliability. Design team quality was more important than the number. A reasonable ratio of programmer to engineer was

three to one, a ratio often contested.

R. J. Bass, British Sugar Corp, predicted a great shortage of professional engineers and others to cope with the more

## IDPM survey

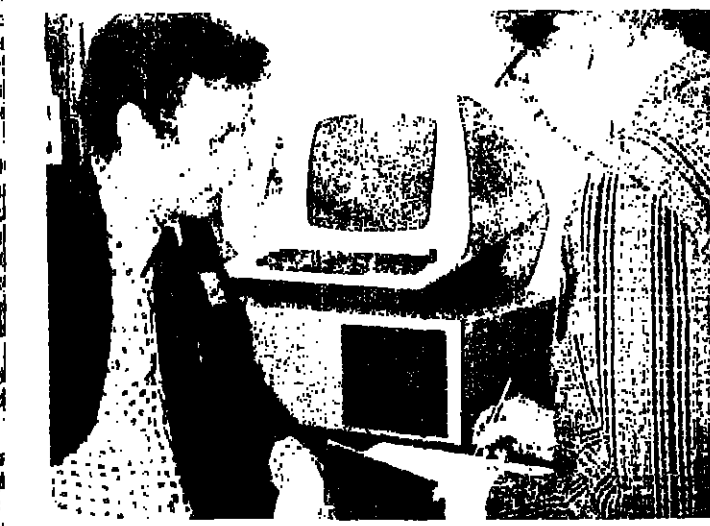
THE Institute of Data Processing Management is to undertake and publish a survey on the impact of microprocessors. A Micro Project Group has been appointed comprising representatives of the industry and IDPM to conduct the survey and prepare a report for publication in the autumn.

The group will be chaired by Alan Wood, a council member of IDPM and will include Malcolm Peltz, former editor of Computer Weekly.

The objectives of the project are to increase awareness of microtechnology among DP management and practitioners; to determine useful microprocessor application areas; to assess the effects on jobs, and examine the role of management in the introduction of microtechnology.

complex control systems which are being applied to industrial systems. Extensive and expensive training would be necessary and must be planned for now.

In 1978 software began to catch up with the hardware on many microprocessors, and Paul Ottaway, Microelectronics, predicted



This was what Microsystems 79 was definitely all about — doing business. Bob Crook (left) of the Luton-based computer store Isha-Wood, gets down to business on a North Star system with a prospective purchaser.

the belief that high level languages were becoming commonplace on microcomputers, as was the transportability of software between machines.

Normally an emotional subject, the panel session on social implications turned out to be a calm and reasoned debate. P. Bennett of ASTMS predicted a 30-40% displacement of office jobs over the next ten years and expressed a personal view that there might be up to four or five million unemployed by 1990.

Alan Woods believed that there was a lot of alarmist, negative and ill-informed comment from the Prime Minister down. Fifteen years ago computer systems were taken away from people; today we were bringing them back. The same anxieties existed, and predictions of unemployment made then were made today, but in the last 20 years we have seen little redundancy.

Worldwide, almost as many new jobs would be created by the growth in microelectronics as were lost, so no time must be lost in exploiting this opportunity. The final words, expressed by I. Gallacher, varied the test of many unemployment would never go down again and probably would rise.

Soon every town with a population of more than 10,000 would have a computer shop. This was the prediction of S. Stevenson, chairman of the South Atlantic Computer Society. At last in the UK there is a fast growing band of amateurs who want to do real computing, and Stevenson recommended the co-operative purchase of more sophisticated systems.

The diversity of interests and industries represented at the meeting clearly showed the universal impact of microelectronics. Whether the opportunities presented will be acted on quickly enough remains to be seen.

## New line from Newbear

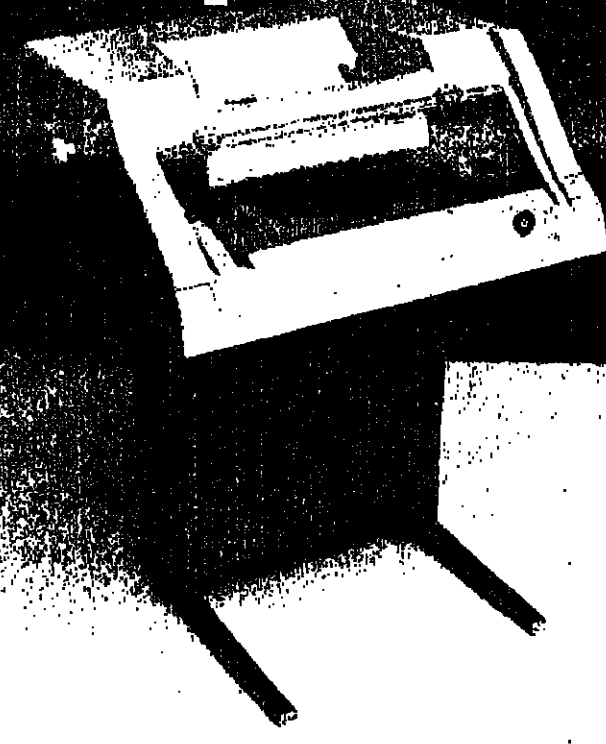
A new line of S-100 bus board systems was introduced at the show by the Newbear Computing Store. Manufactured by Ithaca Audio, of Ithaca, New York, their arrival follows an agreement between the two companies last year.

Newbear will be selling either fully populated and tested boards, or the bare printed circuit boards. Where necessary, the company will also handle those components which are difficult to obtain in this country. It will not, however, sell the boards as kits.

According to Newbear's Tim Moore, the key element in the agreement has been the provision by Ithaca of a full compatibility file on other S100 products. Newbear can now provide full information on which S100 systems the boards will work with.

The range of boards includes a Z80 CPU card, an 8K static RAM board, a video display board offering full upper and lower case ASCII for a 64 character by 16 line format, and a PC2 disc operating system with such features as backup, file package, debugger and assembler.

## be boyden quiet



New from Boyden. An Acoustic Hood for the Teletype 33.

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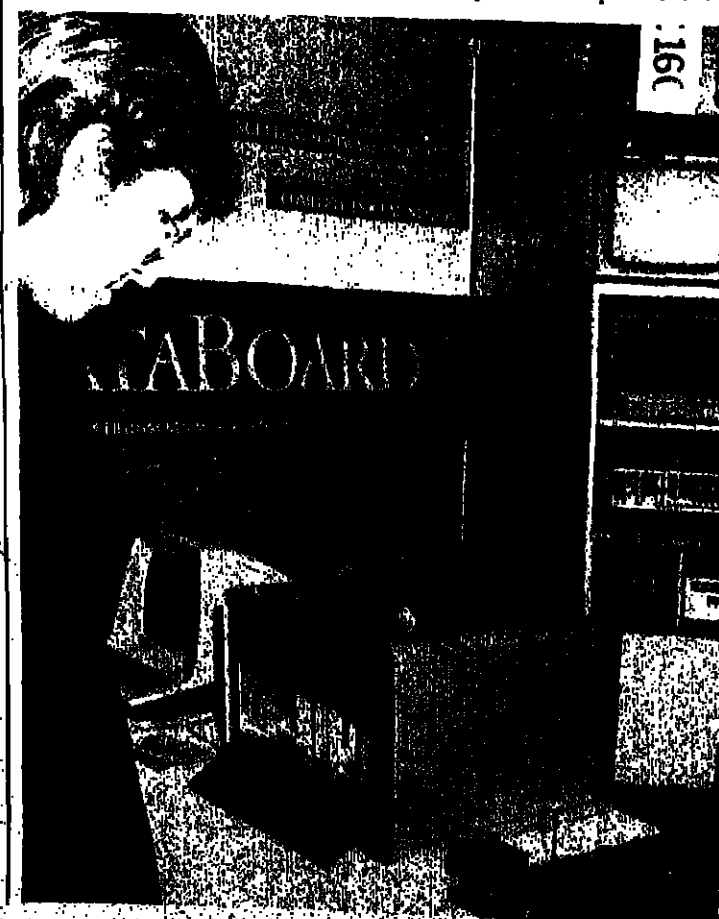
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Above: Further extending the capabilities of this new light pen, it was being demonstrated by Apple's UK distributor, Personal Computers.

Left: On the Sateco stand, the Databoard 4880 modular microcomputer system. The Swedish company is currently looking for agents.

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For literature and demonstration details contact  
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CHRIS YOUETT VISITS THE TV MEX EXHIBITION

# Checkmate for traditional toys

ADVANCES in teletext processing and microprocessor based TV games were the two themes of the TV Mex exhibition at the National Exhibition Centre, Birmingham.

Chess-type games were the most popular with prices ranging between £10 and £200. As the toy market is so competitive, most exhibitors were rather coy about revealing details of chips used. Exhibitors who had a computer or engineering background were more frank about their systems.

The exhibition was also one in the eye for those who maintain that no electronics show north of Watford can be successful.

An interesting variation on the micro-based chess and Star Wars games came from Videomaster. It was showing what its managing director, Cameron Macsween, claimed was the first UK developed micro-based TV game.

Call Star Chess, it is a cross between chess and Star Trek. Based on a Motorola 6800 and three tailored chips, the game

could be run on any TV set and retails for £39.

Castling is not allowed but the pieces can "wrap" off to appear anywhere on the board at random — sometimes to the player's disadvantage.

Not only can players take opposing pieces, but can also shoot down each other's pieces. Kings and Queens have seven shields each, the rest of the back row four each and pawns two each.

There are six levels of play, depending on the abilities of the players. The top one is equal to Grand Master level.

Also on its stand was a TMS 1000 based door bell that should appeal to users of all political persuasions. It plays 24 tunes ranging from The Red Flag to Land of Hope and Glory. The user can change the speed, tone and length of each tune and output is via a two-inch loudspeaker.

Ingersoll, better known for its watches, had a range of games based on what sales director Ray Bent called: "A semi-

programmable dedicated chip." Prices range from £19.95 to £180.95 for your own version of Grandstand minus Jimmy Hill. Bent pointed out that the games could not run on piped TV.

On the Optimisation stand, International Master David Levy was demonstrating Boris. Based on a Fairchild F8 chip, it is programmed for random play and all classic chess moves such as en passant (CW, September 14, 1978).

Spectrum Marketing was demonstrating Chess Challenge 3 which is based on an Intel 8080 chip and retails for about £200. A draughts version costs £39.95 for two level play and £99.95 for four level play. This one is aimed at advanced players.

"Talking" the players through each game and telling them how to use the 12 position control joystick was a bonus with Adam Imports' range of games. They cost between £9.95 and £50 but must be used on a Pal system colour TV set. Based on a range of dedicated ROM chips, the

microprocessor has a timing of 2 MHz.

On a more serious note were small business systems and teletext terminals. Factor One Computers, based in Penzance, Cornwall, was showing the Sorcerer system that is built around the Zilog Z80 processor. Hardware costs £850 for an 8K bits memory system, £780 for 16K bits and £859 for 32K bits. An expansion unit costs £210 and has the S100 bus and its own power supply.

Up to 630K of online storage can be added and ROM program packs are available in cassette form for Assembler, Basic, C Basic, Cobol and Fortran. Word Processing is also available. Factor One Computers was set up in August, 1978 by accountant Ken Furse following interest from his clients for a small, cheap system. He admitted that most mainframes and minis were faster but pointed out that most of his clients were only interested in getting the job done as cheaply as possible.

Furse quoted £5,000 for a complete top of the range system. Portable TV sets could be used as VDUs and he lamented the lack of serious software for micros. Most software to date had been written to customers' specifications in segmented form. Cassette tape recorders could be used for input.

Local talent was represented by Struneh Engineering Electronics Division (Seed) based at Brownhills, Walsall. Its two systems are based on MSI 6800 RAM chips. The system 12 has 5 Mbytes of fixed disc and 5 Mbytes of swap disc. There will be a 76 Mbyte disc option available from June.

System 1 has 8K of RAM and both can take the SS-50. Prices range from £4,500 to £12,000. Graphics terminals are also available.

GEC, Granada and the Rank Organisation were demonstrating TV sets converted to receive teletext. A set on the BBC stand was showing the

From Videomaster comes the chess computer which provides a partner for any player at any time. Costing £39.95, Chess champion can be programmed by the player to all levels of ability from beginner to Grand Master levels.

rival Oracle service. Prices ranged from about £1,200 downwards. Indications are that the price of such sets will soon be about the same as an ordinary set.

Both Rank and Kirby Lee demonstrated 14 inch monochrome videodata terminals costing about £800. They were fitted with auto-diallers. But the Kirby Lester terminal, named Antares, has a feature that allows users to ring off the page, thus saving telephone charges.

After visiting all the stands, I saw on the Alcock and Sons, pocket-sized breath testing machine from Sweden, £39.95. No journalist or PR should be without one!

TIM PALMER TALKS TO THE MANAGING DIRECTOR OF INSAC INTERNATIONAL

## 'UK sells best software expertise in the world'

"WE have to worry about making a profit on our £20 million capital investment — and that means we have to get up to a turnover of £20 million pretty quickly!"

Such a statement might be expected from the latest go-getting arrival in Silicon Valley, US, but from the managing director of a new international software company, it is quite revolutionary.

The new company is Insac International Ltd., and the managing director is Anthony Chander.

Insac International has been formed to operate throughout the world apart from the US and the UK, but it has a brief almost identical to that of Insac Inc in the US. It has two strings to its bow: marketing the expertise of the British software industry to manufacturers in need of additional software effort, and marketing Post Office Prestel

software and British expertise in videodata.

Viewdata is the more glamorous and visible aspect of its business, while the software side, although potentially as lucrative in the long term, is much less well understood.

"Insac is not planning to hold out a shopping basket of already-developed UK software products. What we are trying to do is to identify needs for specific new software products and to get them designed in the UK," says Chander.

Initially, Siemens, CIT-Honeywell Bull, Nixdorf, SEMS are the sort of companies we will be talking to. All the major manufacturers are well aware that they need more software effort than they have already to develop new system and application software, and this is the sort of business we are after.

"Initially we will be looking at Western Europe, but in the medium term, we also see Japan

and Eastern Europe as potential major markets.

"But what we are not prepared to do is commission a member company to write, for example, an operating system for Robotron for a cash payment. We want a continuing royalty income from the sales of whatever we produce." As in the US, Insac and the client company will finance the development of the software product, sharing the risk and the potential rewards, while the Insac member company developing the product benefits from major development contracts which would probably not otherwise have come its way.

"If we pick up a contract which an Insac member is able to handle at a reasonable price, then we are free to give it to non-member companies in the UK," notes Chander.

Why should a big company like Siemens parcel out software development contracts to Insac? "There are 2,000 professional staff within the Insac member companies, which I believe is a larger number than any other software company can boast," says Chander.

"And I believe that, because in this country we have typically avoided ever buying more hardware than we have established exceptional skills in efficient software writing and high standards of documentation and maintainability. Quite simply, British software expertise is the best in the world."



Managing director of Insac International Anthony Chander (left) has topped two other ex-ICL colleagues to fill the key posts of marketing director and operations director. John Graham, formerly managing director of ICL's thriving Hong Kong subsidiary, takes the former post, while Chris Singer, formerly head of marketing with ICL in New York, becomes operations director. Sam Fedida (pictured right), the "father of videodata", is also a director.

## Viewdata centre to be set up

AS a springboard for Insac International's viewdata marketing effort, an International Viewdata Centre is to be established at the company's headquarters in Lincoln's Inn Fields, London.

"It isn't just the Prestel viewdata software or the computer and terminal hardware that we are marketing, but the totality of UK expertise in the viewdata field, in which the skills and experience of information providers, consultants and people offering ancillary viewdata services such as Telesoftware are equally important," says Anthony Chander.

"We want to be able to bring potential customers to a single location where they can see something of all of this at one sweep. We have set aside a big display area which will have six booths, each wall of which will be taken up by a single company giving room for up to 18 companies to exhibit."

Although the Post Office and Insac International are both marketing Prestel viewdata software outside the UK, there is no conflict, because the Post Office is selling only to PTTs, and Insac is selling to commercial enterprises.

"We do not intend to allow any potential conflict to arise,"

adds Chander. "Companies that want to buy from us will first have to get approval from their local PTT to offer a service."

There is also a joint venture between the Post Office, GEC and Insac, called Tristel, which will widen the scope of the Post Office's offering to foreign PTTs. One of the questions which often arises with regard to foreign sales of viewdata is the role of the GEC 4080 minicomputer, for which the Prestel software was written. Chander is confident that even if in the long-term customers do not want GEC minicomputers, the UK is excellently placed to benefit from any desire to move to other hardware.

"The European companies we are talking to want a working system as soon as possible — and there are, for example, companies in France which are interested. To get a working system, they have to buy the hardware and the software off the shelf."

"Now if they want the software translated for, say, a SEMS minicomputer for their next generation system, we will be more than happy to arrange a contract with a UK company to do that. On the other hand they can go ahead and try to do it themselves — if they can!"

## Govt amendments pose setbacks for 'Freedom' Bill

THE ups and downs of Clement Freud's Freedom of Information Bill have taken a distinct downturn, following the first meeting of the Commons committee considering it.

When the Bill gets back to the floor of the House, the government is expected to introduce amendments to remove the right of access of citizens to public documents, leaving it simply as a reformed Official Secrets Act.

Home Office Minister Bryn-Idor Jones introduced at the committee meeting an amendment to remove the statutory right of access, simply requiring civil servants to "consider" disclosure. This would defeat the whole object of the Bill, from the point of view of its supporters (CW, January 18).

John withdrew the amendment in the face of opposition, but said he reserved the right to reintroduce it in the report stage.

Freud did not comment on the

amendment, leaving observers to speculate that the government might succeed in persuading him not to oppose it later. This would make it difficult for anyone else to oppose the amendment, since Freud is the sponsor of the Bill.

The Bill that would remain after amendment would be a new version of the controversial Section 2 of the Official Secrets Act, sharpened up and with less of a "catch-all" coverage. The scope of what would automatically be kept secret as being connected with national security would be considerably wider than Freud's supporters wish.

Committee stage should be finished by early April, as the committee has arranged to meet twice a week rather than the usual once, but the Bill still will have to go through the Lords. If the General Election is not until October there would still be time for it to become law.

## Meet the Peterborough People



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## More Jaguar work for SDL

A NEWLY-FORMED associate of Systems Designers Ltd, Systems Production Ltd, is to provide a microprocessor controlled interface for the Jaguar aircraft proving rig at RAF Lossiemouth. It

will link a Marconi-Elliott 920M flight computer, as used on the Jaguar, to a GEC 4070 to simulate flight conditions. Pictured is a Jaguar of No. 2 Squadron from RAF Satherburg.

## Strikes will hit all government DP centres

From front page has already happened and it has left us at least 25% behind comparable wages in the private sector. What we now want to see is the PRU results applied to us in time for an April 1979 settlement."

Backing Gillman, Ken Thomas, general secretary of the CPSSA, said, "Strike action now seems to be the only possible way to get a fair deal," and that faced with the option of hitting the public or the government in their fight for more money the only way was to "hit hard and viciously at the government's machinery."

"The government still has time to come to terms with the problems in the public sector," added Thomas, "but meanwhile other Civil Service unions will be considering their position." A meeting was planned by the CPSSA and the SCPS with Lord Peart, the Lord Privy Seal, as Computer Weekly went to press. Lord Peart was to be asked if the government did at any time in-

tend to follow the conclusions of the PRU survey.

The Inland Revenue Staff Federation and the Civil Service Union were also holding special executive level meetings to consider whether they should join in the planned industrial action. Doubts about how long the unions can continue with their proposed multi-point attack on the government have been dispelled by the fact that strike funds totalling over £1 million have been amassed to finance a prolonged dispute.

"The problem will not just evaporate," said CPSSA president Len Lever.

Hardware problems on one of the three ICL 1906 machines at the Department of Health and Social Security's Newcastle computer centre resulted in a backlog of pension data that delayed the distribution of money orders to old people last month. The problem, believed to be due to a power supply failure, has now been corrected and all payments have been sent out.

## NEWS IN BRIEF

### Prestel theatre guide launch

A LONDON theatre guide reviews of plays and shows appear on Prestel this week. The guide will be provided by journalists Colin and Patricia Brennan as part of Bank Computer Services' pages, which the productions will be available alphabetically or by various classifications.

Baric acts as an "umbrella information provider" on Prestel and other recently completed subsidiary providers include Royal Institution of Chartered Surveyors and Macmillan Publishers.

### Mini boost

BOOSTING the performance of its 2200 MVP small business computer (CW, April 11, 1978) Wang has announced a memory expansion to a maximum of 84K bytes of RAM and a new disc drive Model 2280. The latter comes with a 13.7 Megabyte platter plus 13.7, 40.7 and 13.7 Megabytes of fixed disc.

### PDP-11 multibyte

USERS of Digital Equipment Corporation's PDP-11 minicomputer are offered a projectable display for connecting a PDP-11 to 18 asynchronous lines of DMAX/18, the PDP-11 built in the US by Analog Computer Technology and sold in the UK by Signet. The system costs £3,422 for the display and £1,000 for the software.

### Turnkey system

ONLINE order processing and ledger functions are implemented in a turnkey system for Mulligan's Bookbinding Software. The system is built on a PDP-11/23K PDP-11 minicomputer with 48K bytes of RAM and a 13.7 Megabyte disc.



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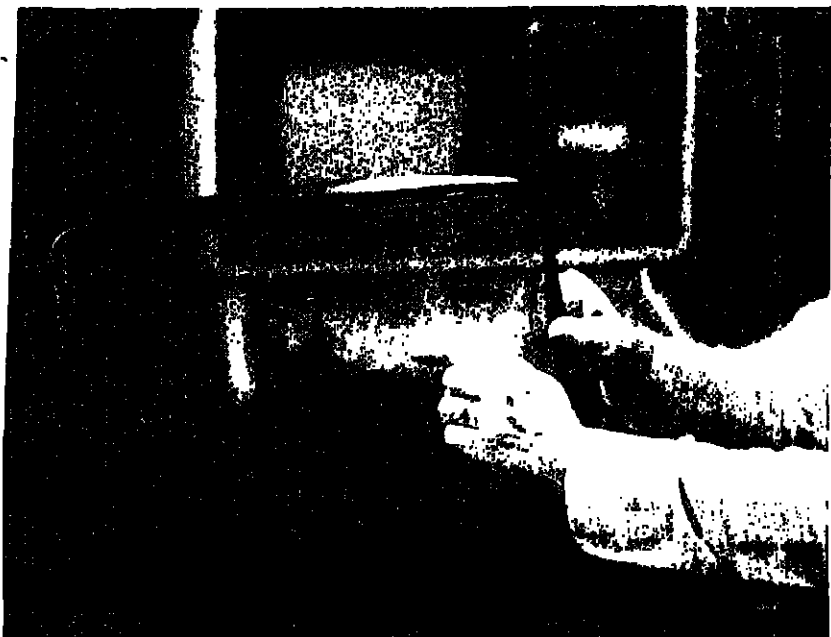


## Using a finger in place of light pen

IF the screen of a VDU is fitted with this transparent position sensor a finger can be used instead of a light pen or joystick in graphic or menu based applications. Called the E270, the sensor is manufactured in the US by Elographics Inc. of Oak Ridge, Tennessee.

The sensor has a conductive plastic layer on top of a resistive substrate, and a voltage is applied across the latter alternately along orthogonal axes. When the finger pressure is applied two voltages are picked off by the conductive layer at the point of contact and converted from analogue to digital by a control unit.

The resolution of the sensor is determined by the number of conversion bits used by the controller. Up to 12 bits can be used. Controllers are available to interface with a variety of computers and microcomputers and the complete E270 system costs \$1,500. Quantity discounts are available.



## Ex-student charged with falsifying marks

A FORMER student at Queen's College in New York who also had a job in the college's computer centre, has been charged with falsifying the grades of 19 different students, including his own, on computerised academic records.

Another former student is charged with falsifying the grades of 19 different students, including his own, on computerised academic records. The charges, which include falsifying business records, are taking effect.

A lecturer at the college had noticed a discrepancy between

## Hobby show at the Palace

A NEW hobby electronics exhibition is to be held at London's Alexandra Palace in June.

To be known as "The Great British Electronics Bazaar" the show will be aimed at the amateur, hobbyist and small buyer. The organisers are the Evans Steadman Communications Group, which already has several successful exhibitions for the electronics and related industry. They aim to have up to 200 exhibitors.

As an amateur show, the cost of exhibiting will be kept low. With all stands identical, a foot by eight foot area will cost £250. The organisers claim as no stand building and no frills will be allowed, it should be the sum total of the exhibitors' own displays. Many small companies, they say, may be less. Shared stands should be available for £30.

The three-day event, to be held on June 28 to 30, should attract at least 15,000 visitors, the organisers predict.

## NEWS IN BRIEF

### Talisman official start

FOLLOWING the announcement by the Stock Exchange of its charges for the Talisman computer based settlement system (CW, February 1), the Stock Exchange (Completion of Bargains) Act 1976 will be brought into force next Monday, February 12, formally allowing the introduction of the system.

Talisman cost £15.5 million to develop, of which £3.5 million has already been recovered. The remaining £12 million will be amortised over five years at an annual cost of £2.4 million. The running cost of Talisman will be £6.5 million so that the total cost per year during the first five years will be £8.9 million. The charges for Talisman have been set to recover these costs at 15,000 bargains a day, the average number since April 1977.

### Rival to 370

PLUG compatible processors competing with the smaller machines in the IBM 370 series are to be sold in the US by Telex as the 1600 Series. The processors are built by Cambridge Memories, the firm that holds a 40% share in IPL Systems. The latter company manufactures the 370/138 and 148 compatible machines sold by Control Data as the Omega series.

### For DG users

NOVA compatible products are now being offered on an OEM basis to Data General users by Real Time Control, the minicomputer systems house based at Carpenders Park, Herts. The products include Mostek memories, a memory management/protection unit and a programmer communications multiplexer.

### Racal buys share

IN an agreed purchase that values the company at £5 million, Racal Electronics has bought 65% of Microwave and Electronic Systems Ltd (MESL). Based in Scotland, the renamed Racal-MESL has three divisions, operating in radar, security systems, and microwave components, in particular microwave integrated circuits.

### Fine Fare back-up

BACK-UP for Fine Fare's distribution and stock control system is to be provided by linking VDUs and printer terminals in its stores and depots to head office computers in Welwyn Garden City. Case 9,600 bps modems and multiplexers will connect terminals to the group's central Burroughs B4700 and B3700, and a Digital Equipment PDP-11/70 if one of the PDP-11s in its six major depots fails.

# TUC warning over new technology

THE TUC recognises that developments in electronics are creating a late 20th century industrial revolution, but is determined to prevent it from trampling over the interests of working people, as its

This commitment was made by David Lea, assistant general secretary of the TUC, in his winding-up speech at the TUC Industrial Strategy Conference on electronics last week.

Earlier the Prime Minister had emphasised the importance of the micro in improving the productivity of British industry (CW, January 23).

Lea went on to underline a point that had already been made several times earlier in the day, that the real risk-takers in any industrial revolution were the workforce. He agreed that developments in electronic technology did promise benefits to the economy, but stressed that the workforce must share in these benefits.

He specifically rejected the view which took large numbers of unemployed for granted as an inevitable consequence of electronic developments. He called for a positive plan to ensure full employment, and suggested that this could perhaps be achieved by examining the length of the working week.

It was important to see all these developments in terms of an overall economic and social plan, he continued. This meant involvement between the four levels of the economy: the government, the sector working parties, the corporations and the workforce.

## Artificial intelligence seminar

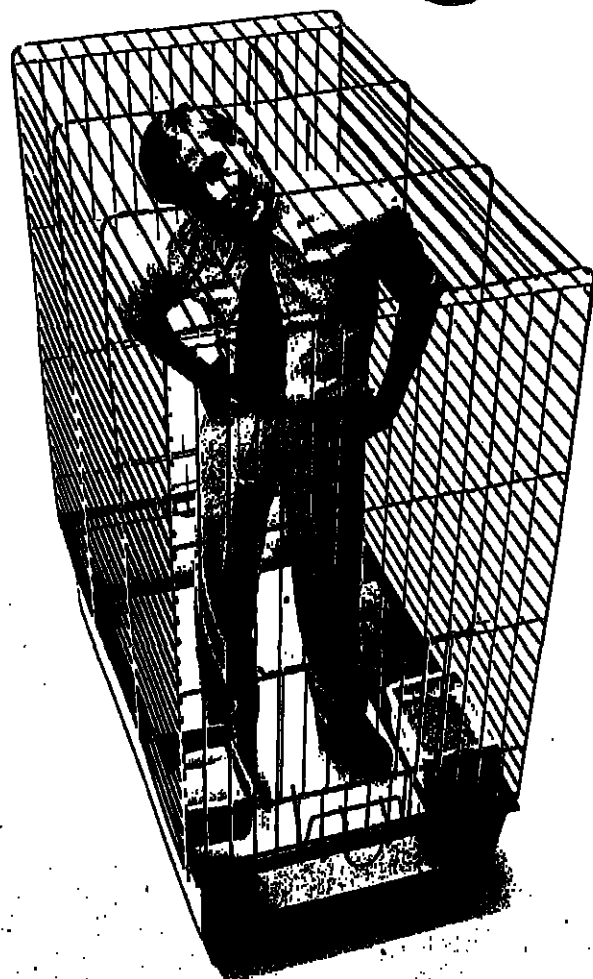
A TWO-DAY seminar on the practical applications of artificial intelligence, which will look at many of the newer facets of the subject, is to be conducted by Donald Michie, professor of machine intelligence at the University of Edinburgh.

Organised by Intotech International, the seminar will take place on February 13/14 at the Regent Centre Hotel, London, and Professor Michie will discuss the computerisation of chess and how a grand master "sees" a chess position.

Other speakers will include leading names in computer science, knowledge engineering, and the social implications of artificial intelligence.

Donald Michie has published many books and articles on AI and perception and is a visiting lecturer in the US and the Soviet Union.

# Are you still locked in by that micro chip bargain you bought a year ago?



You thought you were saving money. And ever since you've been losing time, time, time...

## TIM PALMER LOOKS AT THE IMPACT OF IBM'S 4300 SERIES LAUNCH

# 3030 prices set to tumble again

PURCHASE prices for IBM's large-scale 3030 series processors look set to tumble some time this year following announcement of the 4300 series, causing even more problems for IBM's competitors. So believes Aharon Orlansky, vice-president with New York stockbrokers Oppenheimer & Co.

"The price per min on the 4300 series is 40 to 50% lower than on the 3030 series," he told Computer Weekly. "This will suggest to many users that the pricing structure on the 3030 is shaky, and they are likely to hold off orders in anticipation of price cuts."

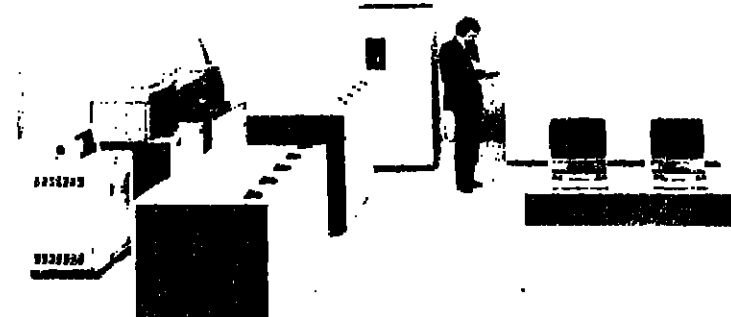
Des Lee, chairman of the IBM Computer Users' Association in the UK, echoed this. "We were expecting replacement prices for the 115 and the 125, but this announcement kills the 148, and one user is talking of cancelling his 3031 order and getting a 4341 instead," he said. "The prices are about a quarter of those for the 3031. It really wipes out most of the leasing companies, and will hit Tel and

the CDC Omega particularly hard." One feature of the dramatic change in the pricing structure is in the memory. In the US it is priced at \$15,000 per Megabyte, compared with \$70,000 per Megabyte on the 3030 series. UK prices are higher but comparable. This erosion will clearly make life very difficult for the add-on memory manufacturers. As with the 138 and 148, the ratio of lease to purchase prices for the 4300s implies a short lifespan for the present hardware. In the US, the selling price is written off over 35 months of straight monthly rental; in the UK, the multiplier is even shorter: 33 months.

Orlansky sees this as a reflection of the gathering pace of semiconductor technology development.

"There was a factor of two improvement in price performance over the five years between the 370/188, first delivered in July 1973, and the 3033, first delivered in April last year. It looks as if that five years for the same price has now fallen to three years," he said.

As well as offering an alternative to IBM's 8100 distributed processing system (CW, February 1), the 4331 directly confronts GSD's System 38. It is said that GSD salesmen were decidedly crestfallen when they learned just how attractive the new product was, but for the



This 4341 configuration includes, in addition to the processor, two consoles, a 3203 Model 5 printer, 3340/44 disc drives, 3420 tapes, a 3803 control unit, a 3505 card reader, a 3825 card punch, and the 3880 disc controller.

user, the question is which to choose.

Other things being equal, Orlansky recommends the System 3-type user to go for System 38 on the grounds that there is no relational database, only DL/I, on 4331 at present.

Lee is less certain. "Why not order both and let the two IBM sales teams fight it out? System 38 deliveries are still some way off, and Cobol is likely to have been added before anyone ordering now would get delivery."

Both are agreed that there are more 4300 models in the wings. Orlansky expects one between the 31 and the 41, and another above the 4341; while Lee believes that 4321 and 4351 models are the most likely.

"It looks to me as if DPD and GSD are preparing for a complete divorce, which means that DPD products will have an even lower starting point."

"The structure of the machines also makes attached processor or multiprocessor versions straightforward to configure," he noted.

Overall, Lee confesses to being "absolutely amazed."

"We are basking in the sunshine of IBM's price cuts. We have had a list of IBM price adjustments on other products, some up and some down, and the consensus is that they are very reasonable."

Commenting on the new 570 Megabyte 3370 disc drive, Lee noted that it had simultaneously been announced for the System 38. "It offers 3850-type mass storage capability to lower end users, with a fast transfer rate."

IBM's new approach to software support centres around the establishment of new IBM Support Centres, with an optional (paid for) Local Program Support service.

Users who run into problems with their operating systems or with licensed systems software will first telephone the Support Centre, where personnel will give free advice which IBM hopes will solve most problems.

If this fails, customers will be able to get on-site support, paid for either on a per-visit basis, or under a monthly agreement.

The Support Centre should be fully operational in the UK by the end of the year, and the associated new programming service plan will come into effect on January 1, 1980.

"The new machines may have some impact on the AS/3 model," he said, "but it appears to be aimed primarily at very low-end users of machines like System 38 and even old 360s, so I do not expect much effect on our AS/4 and above."

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## 18,240 Megabytes of disc store possible

PERIPHERAL products announced for use with the 4300 series include two fixed disc drives and the tape drive already announced for use with the 8100 distributed processing system.

The new 3370 disc unit is the largest capacity drive yet introduced by IBM, offering fixed storage of 570 Megabytes per spindle. One to four spindles per string and one to four strings can be attached to each controller on the 4331, giving maximum backing storage of 9,120 Megabytes.

Disks are attached to the larger 4341 via a new Disc Storage Control Unit called the 3880, which has two data paths, each capable of supporting up to four strings of spindles, which can be either the new 3370s, or the 3340 or 3344 Winchester technology drives. This gives a formidable maximum capacity of 18,240 Megabytes.

The other new unit for the 4331 is a special packaging of the 84 Megabyte disc for the System 38, System 34 and 8100. Up to four spindles per string and up to four strings can be attached for a maximum 1,032 Megabytes. Called the 3310, it is a low-cost device designed for database

and interactive applications. It was developed at Hursley and is manufactured at Havant.

Already announced with the 8100, the new 8509 tape drive is supported by the 4331. It is designed to handle journaling and data re-storing, and runs at 12.5 ips for a 20 Megabyte per second data rate, or at 100 ips for a 160Kbps data rate. Up to six can be attached to a 4331.

REACTION from Magnuson Systems, the Sunnyvale company established to build IBM-compatible machines with revolutionary architecture, was to welcome the 4300.

"It endorses our strategic architecture," president Joe Hitt told Computer Weekly. "We have been planning our product around the E-series since May, and IBM is in effect describing our product, since it includes Magnuson M80 features like remote service, separate console processor and pricing. We will be making a reactive product announcement shortly."

In the reasonably simple world of small programs - say, 512 words - price is still a pretty good criterion.

But once you're up in the 4K/8K numbers, there are a lot more important questions to ask.

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## COMPUTER OPPORTUNITIES IN SCOTLAND

### An expanding industry North of the Border

WHEN talking to DP staff about a career in Scotland one is reminded of the two shoe salesman sent to central Africa in 1925. One called his company saying "No potential — nobody wears shoes" while the other said "Fantastic opportunity — nobody wears shoes."

Many DP staff seem to regard Scotland as a waste land with no development, old hardware, obsolete systems and poor salaries. However, the more enlightened professionals can clearly see and seize the challenges and the opportunities which are being presented.

Computing North of the Border is in many ways no different from that in the rest of the UK, but in other respects reflects commercial development and problems which are peculiar to Scotland. To understand the state of the nation it is necessary to examine the past.

A large proportion of industry is situated in a narrow belt bounded by Dumfries, Falkirk and Perth in the north and Irvine, Hamilton, Motherwell and Dalkeith in the south. Manufacturing companies are more concentrated in the west near the Clyde with its shipyards and Atlantic shipping routes, while banks, finance houses and Civil Service installations are more frequent in and near to the capital.

Many companies are relatively small, and a high percentage have been slow to use in-house computers — a fact which is all the more amazing when one considers the manufacturing presence of Motorola, Burroughs, Honeywell, IBM and ICL. There is a strong bureau sector which has enabled many companies to gain first-hand experience while avoiding first-time users' mistakes.

Over the past few years the various regional councils and the Scottish Development Corporation have invested heavily in new industrial areas and in attracting new businesses to a wider range of towns, with the result that one finds an increasing number of overseas companies opening subsidiaries.

This pattern of development has had a significant effect on the use of computing. Until recently, salaries were well below the national average and consequently there was a steady drift of trained DP staff down into England.

This loss of personnel tended to increase the resistance which companies had towards training, resulting in a shortage of skilled people. In more remote districts the lack of alternative employment and poor transport also had a depressing effect on pay scales. It is also a fact that conservative management in

traditional and engineering industries has led to the implementation of batch systems.

In the past two or three years, however, there has been a radical change, a change which is only partly due to the advent of North Sea oil. The introduction of new technology leading to third generation hardware, the increasing power of the mini, the growing use of the micro (all of which contribute to lower cost/performance levels), have enabled management to tackle the need to reduce stock levels, increase productivity and improve

**NEIL PHILLIPS, author of this article on career opportunities in Scotland, is managing director of consultancy Mal-N Associates of Glasgow, and a governor of the Institute of Employment Consultants.**

management, administration, and manufacturing controls, in order to achieve more competitive unit costs.

Salaries have improved and, with more car owners, people are more mobile and have a greater choice of job opportunities in about 750 installations which now operate. While it is difficult to quote a precise figure at present, there are probably in excess of 400 vacancies for operators, programmers, analysts and managers throughout Scotland, and most installations with eight or more staff could justify employing one extra person.

Having examined the general picture, we can now identify one or two specific needs. Sales of new machines in Scotland are very healthy and many of the hardware manufacturers have requirements for pre- and post-sales support staff and/or people with conversion experience.

While the increased use of micros is becoming more evident, there is no sign that the bureau service sector is decreasing. These companies, like the manufacturer, recruit people who can identify the needs of the user, often in widely differing sectors of industry.

Many users are moving from batch to online, and in 1979 in Scotland was recently described as the year of the VDU. There is a need for people with experience of CCP, Driver and other communications software and TP monitors, and there is a growth in the use of database management.

Other companies are developing real time systems and this is particularly true in the engineering and oil-

based industries. Analysts and programmers are needed in most of these areas, while some companies still need additional staff to develop more batch systems.

Programmers with 12-15 months' experience can start on £3,700-£4,100 and salaries then progress to senior analysts earning up to £7,500.

But changing jobs is not only about more money, job satisfaction or acquiring new skills; equally, it involves moving house, making new friends, maintaining one's standard of living and enjoying the same or fresh leisure pursuits. Scotland presents certain differences from other areas but in return has much to offer.

One major difference is that traditionally more people have lived in and have purchased flats. One often hears references to "tenements" in cities like Glasgow and Edinburgh. These are not the slum buildings of, say, London, Birmingham or Leeds, but could even be modernised luxury apartments. Prices for smaller properties can start as low as £5,000.

Recently there has been extensive renovation of older buildings paralleled by an increase in the building of private houses. Until this happened, property in Scotland tended to be in and around the price range more typical of London and the Home Counties. Modern housing by nationally known firms is now available from about £13,000.

In terms of leisure Scotland has everything to offer. One has the choice of manufactured entertainment by way of night clubs, theatres, restaurants (ethnic or traditional), cinemas, touring pop stars, art galleries, museums, discos and pubs, although in some of the smaller towns these facilities are limited.

If, however, you want to get away from all this and do your own thing then there are some well-equipped sports centres and sports clubs, and Scotland's natural attractions. Twenty minutes from the centre of any Scottish city even at the rush hour, one can be deep into some of the most beautiful countryside in the UK.

Industry is expanding, and development of computerised systems is only being held back by a shortage of people. No matter what their skills, analyst or programmer, or whether they want to work for user, manufacturer, bureau or software house, the opportunities in Scotland are significant.

Anyone who takes up the challenges of Scotland will enjoy a way of life equal to anywhere in the UK, and better than many.

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#### COMPUTING OFFICER

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Further particulars can be obtained from the Establishment Officer, The University, College Gate, St. Andrews, Fife, with whom applications and the names of three referees should be lodged by Monday, 19th February, 1979.

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SYSTEMS PROGRAMMERS**

There are opportunities to join Software Houses and Computer Manufacturers in Glasgow and Edinburgh and users companies in most areas. Relocation packages are available. To arrange an interview in: **LONDON, BIRMINGHAM, MANCHESTER, LEEDS, NEWCASTLE OR GLASGOW.**

Telephone NEIL PHILLIPS TODAY on 041-226 4721 or in an evening on CROSSFORD (055-588) 319.

MAL-N ASSOCIATES LIMITED  
SIN FLOOR,  
GORDON CHAMBERS,  
60 MITCHELL STREET,  
GLASGOW G1 3NQ.

CONSULTANT  
NEIL PHILLIPS MSc  
041-225 4721 (Office)  
085 888 219 - Crossford (Home)  
Employment Agencies Act (1963)  
Licence No. 50-252

This well known Engineering Company seeks to engage:

## Systems Analysts

The successful applicants will be required to design and implement computer based information.

They should preferably be graduates or professionally qualified and/or have several years' experience in manufacturing industry with working knowledge of a wide range of associated systems including production/stock control and on-line communications.

The company's configuration is an ICL2804 with 96K store and EDS80's supporting batch operations and DDE stations with 7502 terminals handling on-line applications.

Please write stating brief career history and qualifications to:

Personnel Manager  
**ANDERSON STRATHCLYDE LIMITED**  
47 Broad Street  
Glasgow G4 2JW

## Anderson Strathclyde

Informal enquiries may be made to Dr. P. W. Faulk, telephone 031-225 8432 Ext. 138. Application forms may be obtained from the Staff Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HX. Ref: 32/79.

### WANTED URGENTLY JUNIOR COBOL PROGRAMMERS

Preferably H64 or H66

Also COBOL 74 would be an advantage.

- ★ Location Glasgow
- ★ Top rates for long contracts

Apply in first instance to:  
**TRIDENT COMPUTER SERVICES LTD.**  
2115 Coventry Road  
Sheldon  
Birmingham B26 3EA  
Telephone: 021-742 4431

### ANALYST/PROGRAMMER

c. £5400

Inverclyde District Council encompasses the industrial centres of Greenock and Port Glasgow, the coastal resort of Gourock and the surrounding green belt areas of Inverclyde, Wemyss Bay and Kilmorrie.

We are looking for someone who can combine a background of at least 2 years' programming with a knowledge of DOS/V5 and some systems experience. The person appointed will be required to set up new systems through from specification to test running.

The Council has a disk-based IBM 370/125 running under DOS/V5, with 1741 RJE terminal. All input is from 3740 diskette. The major programming language used is RPGII. The Council provides a service by direct link to adjoining districts.

Salary will be dependent on qualifications and experience. Assistance may be given with housing and relocation expenses. Further information can be obtained from the Personnel Officer, Inverclyde District Council, 24th March 1979.

Application forms and job descriptions are available from the Chief Personnel Officer, Municipal Buildings, Greenock PA15 1LY. Telephone 0475-24400, extension 266. Completed forms must be returned by 14th February 1979.

**Inverclyde district council**

### CRAG ROOM PROBLEM

Our problem is that we are looking for one of the above. If you can't work out the anagram don't worry, read on.

**WE ARE LOOKING FOR SOMEONE WITH:**  
A level standard education, at least 2 years' commercial experience and on-line experience.

**WE OFFER:**  
Varied work with a number of different languages and software packages, and attractive salary, excellent working conditions and fringe benefits and low cost housing in a picturesque area.

We currently run batch processing by RJE with an ICL 2803 linked to a 370/158 in California. We are developing an on-line order entry system using TSO linked to the 370/158. In addition we provide software support to our other European subsidiaries.

This is an ideal opportunity for someone with on-line experience to provide their worth, or for an experienced Cobol Programmer to broaden their knowledge.

If you are interested, please write giving brief details to The Industrial Relations Manager.

**BECKMAN INSTRUMENTS LTD.**  
Queensgate, Glenrothes, Fife.

**BECKMAN**

# Join Data General's Software Professionals in Scotland.

Our Systems Engineering group requires additional software support specialists.

They will be joining a totally committed industry leader who believes in giving clients a professional service from the word 'go'. That's what has made us the world's fastest growing company in the business with more than 50,000 installations world-wide.

### Broaden your horizons

You'll be into every type of industry and business... commercial Data Processing, on line file inquiry, communications, instrumentation and control and so on. You'll work with advanced compilers and teleprocessing software.

### Broaden your knowledge

Data General systems range from microprocessors to the Eclipse M600 with up to 2 MB of main memory — all supported by a vast array of upward compatible system software — ranging from small real time executives to multifunction operating systems — and including a list of programming languages unrivalled on mini-computer systems.

### Systems Engineers

You'll provide pre and post sales technical consultancy. Salary packages of up to £8,000 plus a company car and participation in our incentive scheme. Naturally, we will provide assistance with re-location if necessary.

We'd like to know about your progress to date — and where you see your career going. You must have in-depth experience of software from either an advanced applications or systems programming background. You should have the personality to get on with clients and be able to talk commercial problems with them.

You'll be working in the Glasgow area. If you're a Systems Analyst with your feet firmly planted in one boring spot — this is the ideal opportunity for you to consolidate your career experience.

### The next step

Telephone Janet Field on 01-572 7455 or write to the address below for an application form.

**Data General**  
Data General Limited, 3rd and 4th Floors, Hounslow House,  
724-734 London Rd., Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455.









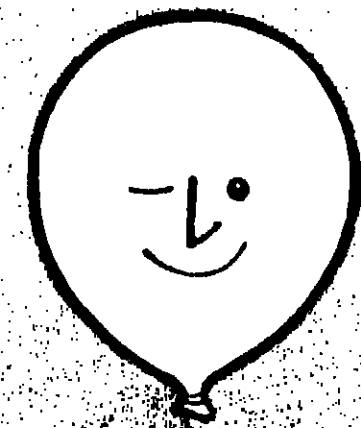
# Appointments

**CHRIS PRIER**  
Assistant Classified  
Manager  
01-261 8028

**LONDON**  
01-261 8028

**MANCHESTER/GLASGOW**  
061-275 0723/24

**BIRMINGHAM/BRISTOL**  
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52-£5

COMPUTER WEEKLY - Highest requested circulation at a cost per thousand 25% lower than the nearest competitor

## MYRIAD

### SENIOR ANALYSTS EARN CIRCA £45,000 IN 5 YEARS

#### RESPONSIBILITIES:

- ★ Communicate at middle management level
- ★ Investigate and define users problems
- ★ Consider all possible solutions
- ★ Prepare feasibility studies and systems proposals
- ★ Estimate project requirements and produce time schedules
- ★ Manage project teams, monitoring progress against plans
- ★ Control implementation phase and gain user approvals

#### BENEFITS:

- ★ Generous salaries with regular increments
- ★ Planned career path
- ★ 1st Class pension, life assurance and sickness benefits schemes
- ★ Stimulating environment with a wide variety of development projects
- ★ Large IBM installation with plans for additional hardware
- ★ Bordering Country/N.W. London - Full relocation expenses
- ★ Modern offices: subsidised restaurant, sports and social club

Ref: 51/0802

For further information regarding these vacancies, please contact:

**MYRIAD APPOINTMENTS LIMITED**  
30 Fleet Street London EC4Y 1AA  
01-353 0981 24 HRS.

## SYSTEMS ANALYSTS AND PROGRAMMERS

SALARY TO CIRCA £8,500 P.A.

### PLUS MAJOR COMPANY BENEFITS INCLUDING FOR SOME LEVELS A COMPANY CAR, AND STRUCTURED CAREER OPPORTUNITY

Our client is implementing a new generation of computer systems. This is based on a variety of Mini-Computers which form the nucleus of a nationwide distributed intelligence network, linked to a complex of mainframes within the U.K.

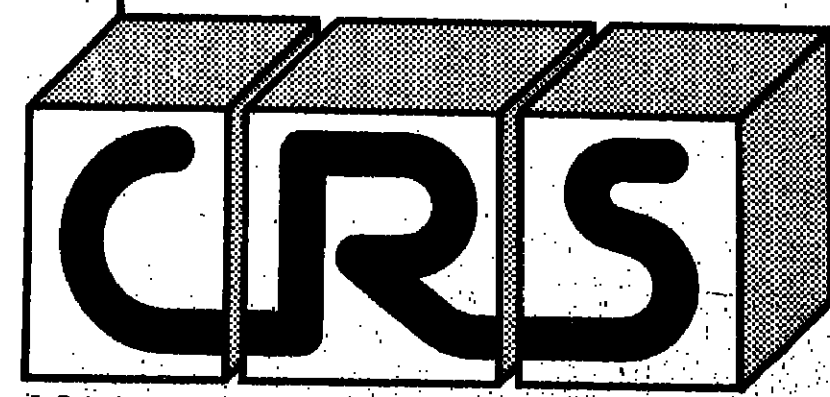
All computer development is centralised through the Systems Services Department based in London. Due to continuing demands for the department's services, additional D.P. Professionals are required to extend the services into new functions and areas.

**SYSTEMS ANALYSTS** - With sound academic qualifications and some 3 years' plus experience in systems design, preferably in a commercial environment. There are further opportunities for Analysts or Analyst/Programmers with less experience.

**PROGRAMMERS** - At various levels of experience are required up to senior positions with some 3 years Cobol and supervisory experience. A working knowledge of a second language such as RPG or Fortran would be a valuable asset.

Actual starting salary will depend on individual qualifications and experience however competitive salaries will be offered to successful candidates and supported by a substantial range of fringe benefits.

For further details and confidential discussion regarding these opportunities please telephone or write quoting reference 12/1CW.



COMPUTER RECRUITMENT SPECIALISTS

18 BUCKINGHAM PALACE ROAD, LONDON SW1W 0QP. TELEPHONE: 01-828 1384. TELEX: 24891

BUPA, Britain's most experienced independent Health Care Organisation, is preparing for expansion. BUPACARE, a major new Health Insurance scheme launched this month, is supported by a database system which will form the basis of future systems development. The growth in the areas of database and office automation has created these exciting opportunities in the Data Processing division.

# BUPA

#### THE COMPANY:

Market leaders in Medical Insurance, the British United Provident Association is a non-profit organisation now helping 2 million people in the UK to budget for private medical treatment.

#### LOCATION:

Pleasant offices in Essex St. WC2 (off the Strand) are easily accessible by both tube and British Rail.

#### HARDWARE:

Currently a 2-megabyte IBM 370/148 configuration with 3330s, to be replaced early next year by an IBM 3031.

#### SOFTWARE:

OS/VS1, ADABAS, CICS, LIBRARIAN/ONLINE, PL/1.

#### PROSPECTS:

Career progression is dependent solely upon your own ability with thorough training given where required. Continued company growth and a progressive D.P. department ensure many opportunities for advancement at an installation which combines a friendly atmosphere with first-class working conditions.

#### BENEFITS:

- 4 weeks' holidays
- New restaurant and L.V.
- Mortgage subsidy
- Free life assurance & medical health insurance
- Interest free season ticket loans
- Pension scheme
- Sports and Social Club

#### ASSISTANT DATABASE ADMINISTRATOR c£5550

An in-depth knowledge of IBM 370 Operations and JCL is a prerequisite for this newly created position working with ADABAS software. The ideal candidate will possess a good understanding of database techniques and some experience in a technical support role would be an advantage. He/she will be responsible to the Database Administrator for the maintenance of standards, the control of database software and facilities and for providing a service to personnel engaged in development projects. DAYS ONLY.

#### OPERATIONS ANALYST c£5550

This is an excellent opportunity for someone with a total of 1 years' data processing experience including 12 months in a technical support role. The successful applicant, who should be familiar with IBM Systems and OS JCL, will be expected to implement and maintain production systems, and will also be involved in the appraisal and selection of software packages. DAYS ONLY.

#### OPERATIONS TECHNICIAN c£5200

If you are conversant with IBM JCL and Utilities and wish to develop your skills in a technical environment, this is the ideal opportunity. Your main responsibilities will be to prepare and maintain production JCL, to monitor disk usage and to provide security backup for production files. A knowledge of LIBRARIAN would be an advantage. DAYS ONLY.

#### SHIFT SUPERVISOR c£5500

A minimum of 4 years' operating experience on IBM hardware, including some supervisory experience, is a major requirement for this position. Preference will be given to highly motivated and mature applicants who should be fully conversant with IBM OS/VS1 operating systems and have a knowledge of OS JCL and Utilities. The Shift Supervisor will be responsible to the Assistant Operations Manager for the enforcement and maintenance of machine room standards, together with the supervision of a shift of 3 operators working a 3-shift system. Excellent prospects for career advancement.

#### COMPUTER OPERATOR c£4450

There is also a requirement for an ambitious young individual with a minimum of 12 months' IBM OS experience wishing to broaden his/her knowledge and benefit from the clearly defined career paths available within this well organised Data Processing department.



**APPLY PROCEDURE:**  
If you would like to discuss any of the above positions, please telephone John Knapp on 01-637 3265 or write to Computer 2000 with details of your experience.

COMPUTER TWO THOUSAND  
217 218 TOTTENHAM COURT ROAD  
LONDON W1P 9AF  
01-637 3265/6

01-637 3265/6





# NORTH WEST

## LIVERPOOL SYSTEMS ANALYSTS £5,000

If you are seeking to expand your career in a professional environment then these positions are for you. The company has an enviable growth record and provides excellent training facilities.

## LIVERPOOL SENIOR ANALYSTS £8K +

If you are an experienced analyst with a programming background, our client offers you the opportunity to work on real-time systems. You will find users sophisticated and professional. Exceptional fringe benefits.

## MERSEYSIDE O & M ANALYSTS £6,000

Our client seeks O & M persons to join existing computer project teams. You will find the environment stimulating and your skills will be acknowledged and properly rewarded. Relocation available.

## NORTH WEST SALES PEOPLE £12 K +

A major manufacturer is seeking an experienced "New Name" sales person for the North West. You will receive a car and have an exciting product line to work on.

## MANCHESTER CORAL 66 PROGRAMMERS £6,000

Our client has vacancies for experienced CORAL 66 programmers working on electronics/control situations involving micro computers. There is wide scope for you in this expanding field.

## WEST MANCHESTER MINI SALES £8 K +

A mini computer manufacturer with a very attractive and reliable range of hardware seeks an additional sales person of proven track record to work from his Manchester office. Generous car allowance paid.

## MERSEYSIDE SENIOR OPERATORS £6,500

Our client is establishing a new installation and requires senior operations personnel. You should have large mainframe experience, be very competent and prepared to work hard for very high reward.

## LIVERPOOL SHIFT LEADERS £7,000

Could you manage a shift in a multi-processor environment? If you have a good academic record and are ready for the challenge then our client has a vacancy for you. He will pay relocation and there is a bonus.

## SALE ANALYSTS £5.5 K

A software house has vacancies for experienced analysts with sound programming background. The company is expanding and you may be assured of a career of repute in this company of repute.

## SALE PROGRAMMERS £5,000

COBOL or Assembler programmers are required by our client for a variety of interesting work. You will gain analysis experience if you are subtle and the only bar to progress is your own ability and competence.

For any vacancy West of the Pennines phone LEN CRAY on LEEDS 444185 (reverse the charges) or on LEEDS 687118 (evenings and weekends). Alternatively, write with details (no stamp required) to Lorien Computer Services, FREEPOST, LEEDS LS7 3YY.

# YORKSHIRE & HUMBERSIDE

## HULL SYSTEMS ANALYST £6,000

A medium sized installation has a vacancy for a systems analyst (preferably with a programming background) for development work.

## HULL ANALYST/PROGRAMMER £5,500

Commercial analyst/programmer required for development of Financial and Stock Control systems in expanding installation.

## HULL PROGRAMMER £5,500

PL/I or COBOL programmer required by IBM DOS/VS installation to supplement existing team. This is a responsible position in a dynamic group.

## DONCASTER SYSTEMS ANALYSTS £6,000

A major installation in the area requires additional young analysts for an expanding manufacturing commercial situation. Relocation is available.

## NORTH YORKS PROCESS CONTROL £6,800

Coral 66, RTL II, Assembler and ALGOL programmers would find our client's process control situation involving both MINIS and MICROS very exciting. Relocation available to this delightful part of the country.

## WAKEFIELD PROGRAMMER £4,500

A COBOL programmer is required for this small ICL installation working on a range of consumer projects. Would suit a programmer considering his first move.

## BRADFORD COBOL PROGRAMMER £5,500

Our client seeks several additional programmers for this installation where the hardware is expanding. Your career can grow as the installation grows.

## SHEFFIELD COBOL PROGRAMMERS £4,500

An established ICL installation has vacancies for additional COBOL programmers for both manufacturing and commercial systems.

## SHEFFIELD PROGRAMMERS £5 K + Bonus

Our client has vacancies for commercial programmers, regardless of language or hardware. You will find variety and interest in a growing company. Substantial bonus is paid.

## LEEDS O & M ANALYST £5,500

Experienced O & M person required to join computer development team. Work involves warehousing and distribution systems.

## LEEDS SYSTEMS PROGRAMMER £5,700

Experienced IBM DOS/VS systems programmer required for company in central Leeds. Alternatively, experienced IBM Assembler programmer will be considered.

## LEEDS BASIC PROGRAMMERS £5 K + Bonus

If you have BASIC or BASIC + experience then our client would like to hear from you. Variety of commercial work on DEC hardware in exciting environment.

## LEEDS ANALYSTS (MINI) £6 K + Bonus

If you can analyse/design real-time systems on mini computers then we have the positions available for you. Wide experience to be gained.

## LEEDS ANALYST/PROGRAMMERS £5,500

A truly professional systems house seeks additional staff with a flexible attitude to systems development. This company is established and successful why not join it in North Leeds?

## LEEDS COBOL PROGRAMMERS £5,750

Vacancies exist for COBOL Programmers - any hardware - with three major companies in Leeds. If you are not currently earning £5,000 then contact us to learn how to earn more.

## LEEDS SYSTEMS ANALYSTS £5,500

Our IBM client in financial/commercial/manufacturing and distribution systems has vacancies at several levels for systems analysts INCLUDING JUNIOR ANALYSTS.

## EAST OF PENNINES HARDWARE SALES £12K

Experienced hardware sales persons for both mini and mainframe manufacturers are required to work East of Pennines. These positions include "new name" and "repeat" business situations.

For any vacancy East of the Pennines phone IRENE ROGERS on LEEDS 444185 (daytime) or on WAKEFIELD 71810 (evenings and weekends). Alternatively, write with details (no stamp required) to Lorien Computer Services, FREEPOST, LEEDS LS7 3YY.

OCS House,  
Servia Road, Leeds LS7 1NJ  
Telephone 0532 444185  
\* (24 hour Ansaphone service)

# LORIEN COMPUTER SERVICES

## Recruitment Consultants

# BE YOUR OWN BOSS

An exceptional opportunity is available to a limited number of experienced, competent and ambitious programmer/analysts throughout the U.K. who have some minicomputer and business applications experience.

If you feel you have the ability and strength of character to own your own business, but are handicapped by only having limited capital, then write to us now with full C.V. address and home telephone number. All replies will be dealt with in the strictest confidence.

If you qualify for this scheme, very substantial finance and management facilities will be placed at your disposal for only a nominal capital investment.

High fliers contact us now at Box 1009, Computer Weekly.

# BRYMBO STEEL WORKS LIMITED

Situated in North Wales and a member of the G.K.N. Group of Companies, we produce electrically melted low alloy and special carbon steels for use in the automotive and light engineering industries.

Currently, we are nearing the end of a £47 million development scheme which will make widespread use of microprocessors and minicomputers.

As a result of this development, we have the following vacancies:

## SYSTEMS ANALYST/PROGRAMMER

To assist in the specification, design, development and installation of information systems initially in the order handling and production planning and control areas. This is an opportunity for a suitably qualified person to join an expanding company and grow with the system.

## PROCESS CONTROL PROGRAMMER

To develop and maintain systems using CORAL and assembler. Although previous experience would be desirable it is not essential but it is considered to be advantageous for candidates to have an engineering/scientific or computer qualification.

Please call, telephone or write for an application form to:

Personnel Director  
**BRYMBO STEEL WORKS LIMITED**  
Brymbo, Wrexham, Clwyd, LL11 6BT.  
Telephone Wrexham 786333

GKN - Britain's largest international engineering group

## International Recruitment Services (UK) Ltd

# Career Opportunities

## Worldwide

One of the world's leading software companies handling projects throughout the world is rapidly expanding looking for men of the right calibre to join their team, which offers excellent advancement prospects.

## Systems Analysts (IRS 767)

The requirement is for self-motivated people with hard DP or line management knowledge. We are looking for top analytical and systems design ability and preferably experience of ICL hardware. Professional qualifications outside computing, especially banking, would be an advantage. The vacancies are based in the UK but involve extensive overseas field work for which the benefits and remuneration are above average.

## Programmers (IRS 768)

Working mainly from the UK but with occasional field work overseas. We are looking for people familiar with COBOL and RPG II, PLAN or FORTRAN on ICL equipment. A minimum of two years relevant experience is essential.

Applicants aged between 25/45 who wish to make a sound career move to a highly regarded company should apply quoting the relevant IRS number.

# JBA

## Sales Engineer

### Herts, Beds & Bucks

A progressive and successful UK company, marketing a wide range of terminals and peripheral equipment, wish to appoint a Sales Engineer to be responsible for the Northern Home Counties.

The position involves demonstrations, selling and technical support particularly with OEM's and end users. Candidates must have a proven sales record in a similar role and a deep knowledge of peripheral equipment.

Excellent base salary with car and unlimited earning potential  
Contact: Jim Baker

## Microsystems Executive

### Midlands

c. £9,000

Our client, a large international engineering organisation, wishes to appoint an Executive to take responsibility for promoting the use of microprocessors in both the companies products and manufacturing activities.

Applicants, who should hold a degree, must have several years experience in the design of products or CAD/CAM systems incorporating micros. A software background would be advantageous. Ability to negotiate with directors and senior managers is essential.

Salary is negotiable according to experience. Attractive company benefits including relocation assistance.  
Contact: Jim Baker

## Support Analyst

### London SW1

Neg. c. £7,500 + car

If you have a good IBM and COBOL background together with extensive experience of design and analysis, this client can offer you a superb opportunity to establish a career in sales/customer support.

The company is primarily concerned with developing and marketing Project Control and Standards Procedures packages - areas in which there is tremendous growth potential.

Applicants should have an out-going personality and be able to communicate their ideas effectively - both the sales team and their clients rely on the Support team for technical and project advice.

Career opportunities in management and sales are wide open for individuals with drive and ambition.  
Contact: Andy Wright

For further information on any of the above vacancies please contact the appropriate consultant.

If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants  
16 Maddox Street, London W.1. Tel: 01-491 4478

## Support Consultants (CAD/CAM)

### Holland

£Neg. + relocation

Our client is one of the world's leading graphical systems manufacturers, concentrating mainly on CAD/CAM Systems devoted to mechanical engineering (automotive and aerospace) industries. They have a sophisticated range of products which are marketed internationally.

Applicants must have a mechanical engineering background including formal qualifications and at least 2 years up-to-date involvement with graphical software. Ideal candidates will already be working in the car or aircraft industries.

Superb permanent positions with European travel. Client offers excellent salaries, bonus package and relocation expenses.  
Contact: Mike Creamer

## System Support Advisers

### Southern England

c. £6,500 + car

The commercial area manager of a leading manufacturer requires a number of enthusiastic analyst/programmers of proven ability to augment a small but highly skilled team. The main objective of this group is to provide technical support to a growing customer base in the South West/East of England. The assignments are varied, challenging and require candidates to have 18 months commercial analysis/design experience in addition to a sound background in programming. Candidates will have an out-going personality, the ability to quickly grasp new concepts, and be capable of communicating at all levels.

Excellent salary, car and fringe benefits and a first class opportunity to embark on a career with a dynamic organisation.  
Contact: Margaret Stevens

## Analyst/Programmers

### Croydon

to £6,500 + benefits

Superb opportunity for programmers with around two years experience, preferably, but not essentially, in COBOL, to join a small team working exclusively in the insurance and assurance market.

The projects undertaken by the company cover a wide range of hardware and software, from large IBM mainframes through to mini computers - there can be few positions available with such potential to widen and broaden your experience.

The company believes strongly in providing a career path for able and ambitious individuals and as you progress travel will be involved, and dealing with clients will become an integral part of the job.  
Contact: Andy Wright

# MICROELECTRONICS AND THE FUTURE... DO YOU WANT TO KEEP YOUR OPTIONS OPEN?

Microelectronics, particularly microprocessors, have been described as today's fastest accelerating technology. In such a climate you can't afford to make a wrong career move. At ERA we'll give you the chance to expand your abilities, to stay a generalist, and work on projects that are not merely at the forefront of technology, but are spread across a wide band of application areas. We have invested heavily, both in manpower and in equipment, and now have one of the top UK teams for independent consultancy, project management, development and

evaluation of microprocessor technology. We operate worldwide and, as consultants appointed under the government's MAP scheme, we can offer a complete microprocessor based product design and development service.

The significance of microprocessors has still to be appreciated by industry and we foresee an increasing demand for our services in future. Current opportunities exist for suitably qualified and experienced men and women in the following areas:

## Microprocessor Applications

We require staff for a variety of industrial and government contracts. In particular, two areas for which staff are sought are:

**A. HIGH INTEGRITY COMPUTING**  
ERA is at present working on the development of a 1MHz serial bus for avionics systems. The project involves microprocessor hardware and software development, interfacing problems and the performance of the system in a high electromagnetic interference environment, in which ERA has considerable expertise.

## B. POWER CONTROL

Opportunities are available to work on the development of a variety of ultra reliable power electronics systems making extensive use of digital electronics and microprocessor control.

## Microprocessor Consultancy

To join a specialist team operating as MAP consultants to industry. These are multi-faceted roles giving the chance of involvement in consultancy for potential applications within industry, training, and for assisting companies with the development of microprocessor or minicomputer based products. Within this field your particular specialisations will be developed and catered for - for example, lecturing abilities in general. However, these positions will call for administrative capabilities and the ability to interact effectively at senior level with clients.

If you have several years experience of microcomputers or microprocessors and are keen to develop your skills in any of the above areas without being restricted by over-specialisation then contact The Personnel Manager, Electronics Research Association Ltd, Cleve Road, Leatherhead, Surrey KT22 7BA. Telephone Leatherhead 73933.

ERA

## SENIOR COMPUTER OPERATORS (SHIFT)

BRISTOL £4800 to £5900

Vacancies exist for Senior Computer Operators at our new Regional Headquarters at Bristol.

The installation consists of twin ICL 2980 DME computers with 7904 front end processors operating under George 3 supporting a comprehensive batch and communications workload.

Applicants should have several years' operating experience in an ICL 1900/George 3 installation and DME/VMEB experience will be an advantage.

A five-day, three-shift cycle averaging 38 hours per week is currently being worked but a seven-day, five-shift cycle may be introduced during 1979.

Terms and conditions are those expected of a large organisation and include generous holidays, contributory superannuation scheme, sickness benefits and new purpose-built offices.

Assistance is available towards relocation expenses where appropriate.

Application forms are available by telephoning Bristol 648236 or by writing to the Personnel Manager, Bodminster Down, Bridgwater Road, Bristol BS15 3AN, to whom they should be returned quoting vacancy number 492/78 (DM) by not later than 16th February, 1979.

Central Electricity  
Generating Board  
South Western Region



## IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

## SENIOR LECTURESHIP IN COMPUTING

Applications are invited to an important senior post in the Department of Computing and Control. An active interest in a research line of research is considered important. The successful candidate will be expected to play a significant role in future developments of the department.

Salary on Senior Lecturer Scale £7,800 to £9,600 plus London allowance and USS benefits.

Further details may be obtained from Professor J. H. Wesscott, Head of Department of Computing and Control, Imperial College, London SW7 2BZ, to whom applications should be sent by 23 February 1979.



**PROGRAMMER**

Salary £4,200-£6,200 p.a.

The Central Electricity Generating Board invites applications for the post of Computer Programmer. The person appointed will initially join a team completing the development of the monitoring and control system for Heysham Nuclear Power Station.

This system uses Ferranti Argus 500 processors and is programmed in ASTRAL. Much of the work will be at the power station but some visits to other locations will be necessary.

The team is responsible for enhancements to the station system and will be integrated into the Station Liaison team serving power stations throughout the region. This team is based at Bramhall near Stockport, where the Regional installation is an ICL 1904S, to be replaced in 1980 by a 2960, with terminals at power stations. In addition several power stations have process control computer systems.

Applicants should preferably have a degree or equivalent in a technical subject and have some experience in on-line programming. Familiarity with ASTRAL will be advantageous.

Applications in writing, from either sex, giving details of age, experience, etc., to the Personnel Manager, Europa House, 4rd Floor, Lane, Cheshire Heath, Stockport, Cheshire, SK9 6QA to reach him no later than 21 February 1979. Please quote vacancy no. 430/CW.

**NORTH WEST****RNIB**

The Royal National Institute for the Blind uses a sophisticated text processing system based on two large GEC 4070 minicomputers for the translation and preparation of Braille literature. The Braille production department is located at Braille House, 338/348 Goswell Road, London, EC1 (near the Angel underground station). We require a

**Computer Operator**

to run the computer system on a day-to-day basis and to assist in making the best use of its facilities.

**Programmer**

to assist in the further development of the text processing software. An interest in word-processing and on-line systems is essential and relevant experience a distinct advantage.

Salaries, including London weighting:

COMPUTER OPERATOR Circa £3500 p.a.  
PROGRAMMER £4000 p.a.

Plus free lunch in staff restaurant

For further information telephone Garath Bennett, 01-837 9921 Ext. 20, or write to him at the above address.

## COMPILER AND BASIC SOFTWARE DESIGNERS PROGRAMMER/ANALYSTS

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<b>£240</b>	ICL 2903 Cobol RJE/MTS Exp.	<b>London &amp;</b>
		<b>Manchester</b>
<b>£210+</b>	RPG II Progs.	<b>City</b>

## OVERSEAS

<b>£355</b>	INTEL 80/80 RAP Assembler Prog.	<b>Holland</b>
<b>£400</b>	Micro Code Progs. and 2900/2903 Exp. Pref.	<b>Belgium</b>
<b>£375</b>	PL/1 IMS MVS Prog.	<b>Holland</b>
<b>£450</b>	Systems Programmer DOS/VS and VM Exp.	<b>Munich</b>
<b>£450</b>	Systems Programmer DOS CICS Assembler	<b>Holland</b>
<b>£375</b>	DOS CICS Cobol Progs.	<b>Holland</b>
<b>£330+</b>	Honeywell OS 2000 Cobol Prog.	<b>Holland</b>
<b>£375</b>	Univac 1100 Cobol or Assembler	<b>Belgium</b>
<b>£375</b>	ICL 2950/60 VMEB/K Communications Exp.	<b>Holland</b>
<b>£325+</b>	Honeywell GCOS Cobol	<b>Holland</b>
<b>£375</b>	PDP Fortran	<b>Holland</b>
<b>£350</b>	System 34 RPG II	<b>Holland</b>
<b>£450</b>	Systems Programmer MVS JES II	<b>Spain</b>
<b>£600</b>	Systems Programmer OSVSI	<b>S. Arabia</b>

RING CHRISTINE KAY/DAVE HAYTON 7340152/6 (24 HRS.)  
ROYALTY HOUSE, 72 DEAN STREET, W.1

OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM, LONDON



# Sales Executives- CAN YOU TAKE THE BULL BY THE HORNS?

## Slough and Manchester

We are an internationally based computer manufacturer and our wide range of sophisticated products in the areas of mini computers, intelligent and non-intelligent terminals has taken us into the top five manufacturers worldwide. Our major commitment to high technology products is ensuring excellent market penetration, both in Great Britain and worldwide.

Our development plans for 1979 mean we need additional:-

### Mini Computer Sales Engineers

base salary to £7,000 on quota earnings  
C. £12,000 + 2 litre car

Ideally you will be a professional sales person with above average technical awareness and a proven track record in mini computer sales. You will be selling products in the £10,000-£100,000 range to the O.E.M. and sophisticated end user market.

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base salary to £6,500 on quota earnings  
C. £11,000 + 2 litre car

Previous experience in the sale of data terminals is preferable together with the ability to sell a family of intelligent and non-intelligent devices incorporating the most recent advances in innovative technology including bubble memory.

The above positions will be based at our Slough and Manchester offices. Other benefits will include; relocation expenses, profit sharing, private patients plan and pension/life assurance facilities. For further details:

CONTACT: DAVID WADE on 061-833 0427 or 0785 56013 after office hours.

Initial interviews will be held in London, Birmingham and Manchester.



# SCR

**SPECIALIST COMPUTER RECRUITMENT LTD.**  
MANCHESTER 061-833 0427 FREEPOST  
Blackfriars House, The Parsonage, Manchester M3 8BB



## SOFTWARE ENGINEERS

TO £7000 p.a.

GROWING TOO BIG FOR YOUR PRESENT JOB?

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INTIMATE WITH A HIGH LEVEL LANGUAGE SUCH AS CORAL, RTL/2, FORTRAN or BASIC?

NOW IS THE TIME TO CONTACT THE

INDUSTRIAL SYSTEMS DIVISION OF GEMINI COMPUTER SYSTEMS LTD., who require experienced staff to fulfil increasing demands for their services. Positions are available in both our LONDON and MANCHESTER offices. Fringe benefits include a company bonus scheme, free insurance schemes and generous site allowances.

Please phone or write to Trisha Williams at our London office, or Ken Blackmore or Ian Davidson at our Manchester office.

Gemini Computer Systems Ltd.  
Industrial South Division  
Gillingham House  
30-44 Gillingham Street  
London SW1V 1HU  
Tel: 01-828 5634

# GEMINI

Gemini Computer Systems Ltd.  
Industrial North Division  
Roberts House  
80 Manchester Road  
Birmingham B14 4PL  
Tel: 091-941 1822

## Systems Analyst

N.E. Kent, c. £6,400

Here is a stimulating and challenging job. Both the staff and the capacity of this major manufacturing Company's DP Installation are being increased, and new equipment to replace the existing 1901 A is currently being evaluated. The successful candidate will work closely with the DP Manager in developing new systems, some of which have been identified, and reviewing existing applications. There is ample scope for creative work. Previous experience in a manufacturing company is essential as is the ability to develop good user relations. Applicants should be familiar with COBOL. There is a first class range of fringe benefits, including family membership of PPP and 24 days annual holiday, together with excellent career prospects.

L. Sutton, Ref: 17049/CW

Male or female candidates should telephone in confidence for a Personal History Form to:  
LONDON: 01-734 6852, Sutherland House, 5/6 Abchurch Lane, W1P 6LZ.



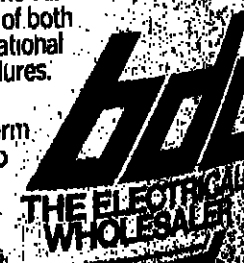
**Hoggett Bowers**  
Executive Selection Consultants  
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE AND SHEFFIELD

## DATA PROCESSING MANAGER

To work with the current system, an on-line real-time Commercial Accounting and Stock Control programme on a Burroughs B741 and B721 with 14 VDU screens. You should be well educated with practical COBOL knowledge. You will have a team of people to assist you with the varied and complex hardware and software, as well as defining operational procedures.

For further details and an application form ring Sheila on 01-800 1245 or write to  
British Distributing Company,  
590 Green Lanes, London, N8 0RA

This position is open to both male and female applicants.



LEICESTER POLYTECHNIC  
School of Mathematics  
Computing and Statistics  
Applications are invited for a  
**TEMPORARY  
LECTURERSHIP IN  
COMPUTING SCIENCE**  
Candidates should be able to deliver one or more of the following: computer architecture, real-time systems, microprocessors, communications, process control, at levels up to B.Sc. (Hons). Post payable for one year from February 1979. Preference will be given to applicants with relevant industrial or research experience. Application form available from: Staffing Officer, Leicester Polytechnic, P.O. Box 44, Leicester LE1 8RH. Tel: (0533) 50181 Extn. 2302.

LIVERPOOL POLYTECHNIC  
DEPARTMENT OF MATHEMATICS  
**RESEARCH ASSISTANT**  
To undertake research into the computational solution of differential equations for the motion of polymeric systems. The post may be of particular interest to graduates with a qualified interest in numerical analysis and statistics, who should possess a good first degree in Mathematics. Salary scale £2,811-£3,207 + £312 A.A. Applications (with CV and references) should be sent to the Personnel Officer, Liverpool Polytechnic, 150, Victoria Road, Liverpool L3 5ET. Tel: 051-527 8001 Ext. 45. Closing date is 15th July 1979. The successful candidate will be invited for an interview. Please send references to: Mrs. J. E. Smith, Personnel Officer, Liverpool Polytechnic, 150, Victoria Road, Liverpool L3 5ET.



**CONTROL DATA'S INTERNATIONAL SUCCESS STORY CAN ASSURE YOU OF A PLACE IN THE SUN. CONTROL DATA SOUTH AFRICA is growing at a great rate . . .**

- Their market share has increased consistently
- Their installed base range of services and products is larger now than ever before
- They have a rapidly expanding Cybernet Data Services Operation
- They have doubled in size twice over the past five years and will do so again over the next two
- Their revenue has grown substantially
- They have a firmly established Systems Base some of the largest in the country
- They are about to launch P.L.A.T.O., the computer based education program
- Their sales have consistently grown by 30% per annum

Control Data now need true professionals with the vision, drive and energy to join them as they grow into the '80's

## DESIGN ANALYSTS— TECHNICAL CONSULTANTS

These are senior positions. The applicants appointed will advise Cyber main-frame users, internal users and marketing divisions in all technical matters related to 170 series systems. It is not a job for a software analyst.

Applicants will ideally have worked recently for at least three years in a user or Senior Analyst environment on Cyber systems. A further five years DP experience is preferable. Knowledge of state-of-the-art techniques vital, as is knowledge of at least four of the following — Cobol 5, NOS, NOS/BE, Database Systems (namely SJK, Total DMS 170 and Adabas), CRM, CCI, IAF, NAM or TAF. This knowledge and experience whilst preferable is as important as good mature leadership qualities. Successful applicants will have a key role in a technical advisory group in solving real time problems, assisting with pre-sales activities and instructing other personnel in specific skill areas.

Salary £9,000-£10,500

## SENIOR SOFTWARE ANALYST (DATA BASE)

The person appointed to this position will have to be an experienced Analyst with three or four years' working experience with the internals of Data Base management software. Ideally with DMS 170 experience. Applications experience is also needed. The proven ability to accept responsibility is key. The work will include installation and maintenance, identifying and correcting software problems, specifying modifications and enhancements to the system and communicating same to the Systems Design Group. Integration and evaluation of pre-release test software will be another important role, as will be customer liaison.

Salary £9,000-£11,500

## DATA COMMUNICATIONS NETWORK DEVELOPMENT

Control Data are experiencing dramatic growth locally and internationally for their locally developed Multi-Streaming Network Communications System. To expand their team they need creative and motivated people.

## NETWORK SPECIALISTS

SALARY AROUND £10,000

At this level you will have an in depth understanding of packet switching networks, various standards and CCITT recommendations such as X25, X28, X29, etc., data communications protocols, operating systems drivers and assembler language programming. You would be interested in investigating customer requirements, pre-sales activities, consulting and design of network software.

## DEVELOPMENT ANALYSTS

SALARY AROUND £9,000

In this area you would have measurable experience in system development, operating system maintenance and some data communications experience. You would have a keen interest in software development, specifically specialising in network systems.

CONTROL DATA is situated in Sandton City, one of Johannesburg's most prestigious office/shopping complexes in the pleasant Northern suburbs. Excellent accommodation — from the comfortable to the lavish — is readily available with easy access to shopping, schools and social facilities.

All positions are open to applicants who wish to take up either temporary or permanent residence in South Africa. Successful candidates will join Control Data's permanent staff and will participate in the generous fringe benefits associated with a progressive organisation.

Substantial relocation and settling in allowances will be provided. All assistance will be given regarding work permits and/or permanent residence.

An exchange rate of £1=R1.75 has been used to calculate salaries. Notwithstanding the amounts quoted are only indicative and actual salaries will be negotiated to match specific abilities.

Senior Control Data personnel will visit London later this month to conduct interviews. If you are interested in applying, please telephone Chad Stolper of Prescott Computers at (01) 242 2142 or, if you prefer, write to him at the address below. Prescott specialise in the recruitment of computer personnel for South Africa and are able to provide candidates with knowledgeable information on working conditions and life in South Africa.

Prescott Computers Ltd  
8 Bloomsbury Square  
London WC1A 2LP

## SENIOR SOFTWARE ANALYST

They require a Senior Software Analyst with at least two or three years' experience with full responsibility for the operating systems software of a large mainframe site (NOS and/or NOS/BE). Telecommunications experience (Intercom and/or IAF, TAF) is essential. The person appointed will have to assume total responsibility for Software at a large multi-mainframe site with a large terminal load. Duties will include installation and maintenance of software, integrating and testing of newest releases and pre-release software. An important further role will be advising management on software related strategy.

Salary £9,000-£11,500

## ANALYST— URBAN PLANNING SYSTEMS

Our new exciting and developing area requires a Systems Analyst/Planning Engineer or Senior Surveyor with at least three years' experience with Urban Planning Software. More specifically they would like him/her to have software experience in highway design and digital terrain models.

The person appointed will have to exhibit all the pioneering qualities needed to build this important part of their Data services operation.

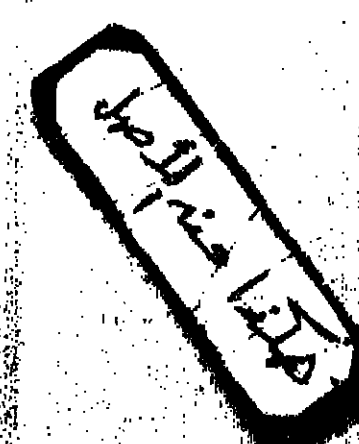
Salary £9,000-£10,500

## COMMUNICATIONS SPECIALIST (HARDWARE/SOFTWARE)

Negotiable

They require an individual who is well versed in data transmission and communications software. You will have a good electronics background with extensive experience in Post Office lines, modems and multiplexors. In addition you will have had considerable software experience at the assembler level and will have designed interfaces, tips and handled communication projects from definition to resolution. You will have also had exposure to planning of communication networks as well as liaison with Post Office officials to ensure installation is effected according to specification.

They offer a challenging position in their national and international support group. The work will involve consulting and hands on exposure to the host to terminal interface, as well as mini to mini and mini to host communication development. The salary is certain to exceed your expectations.





## PROGRAMMERS Advanced Techniques

**LONDON, W1 Up to £6200**

Are you now at the stage where you need to learn more sophisticated techniques? Our clients, based near Oxford Circus, have a lot of development work on hand. This has led to several openings, as below, offering:

- the opportunity of learning modern techniques, such as Database, Communications and Transaction Processing, using major ICL 2980/1900 equipment.
- varied projects, of an interesting and often technically challenging nature, in a well-organised environment.
- retraining where appropriate.
- an excellent starting salary, with good progression and a cost-of-living increase in April.

**SOFTWARE PROGRAMMERS Up to £6200**

To join a small team supporting ICL 2980 VME/B, MAC, IDMS, TP and Utilities, or to support ICL 1900 software (George II +) and Communications, transferring to 2980 software later. The former posts will interest programmers who have worked in a software support role on ANY HARDWARE using ANY LANGUAGE, while the latter requires PLAN and COBOL, plus knowledge of 1900 software. Ideally George II +.

**APPLICATIONS PROGRAMMERS Up to £5600**

We are looking for sound programmers with probably around two years' or more practical experience. This could be using ANY LANGUAGE on ANY HARDWARE. The language used is COBOL, and you will be retrained in this if necessary. (Ref. 886)

**TRAINEE PROGRAMMERS £3300/£3600**

A degree (ideally in computing) or good "A" levels are required, and you will be asked to take an aptitude test. Training in COBOL will be provided. (Ref. 880)

We are recruiting on behalf of clients. Please ring us for a confidential talk, quoting the appropriate reference, or leave a message on our answering machine after hours and we'll contact you.

**EDP SYSTEMS 01.637 5796**  
52-53 Margaret St. London W1N 7FF

## PROJECTS CONTROLLER c.£8,500+ Car S.Yorks

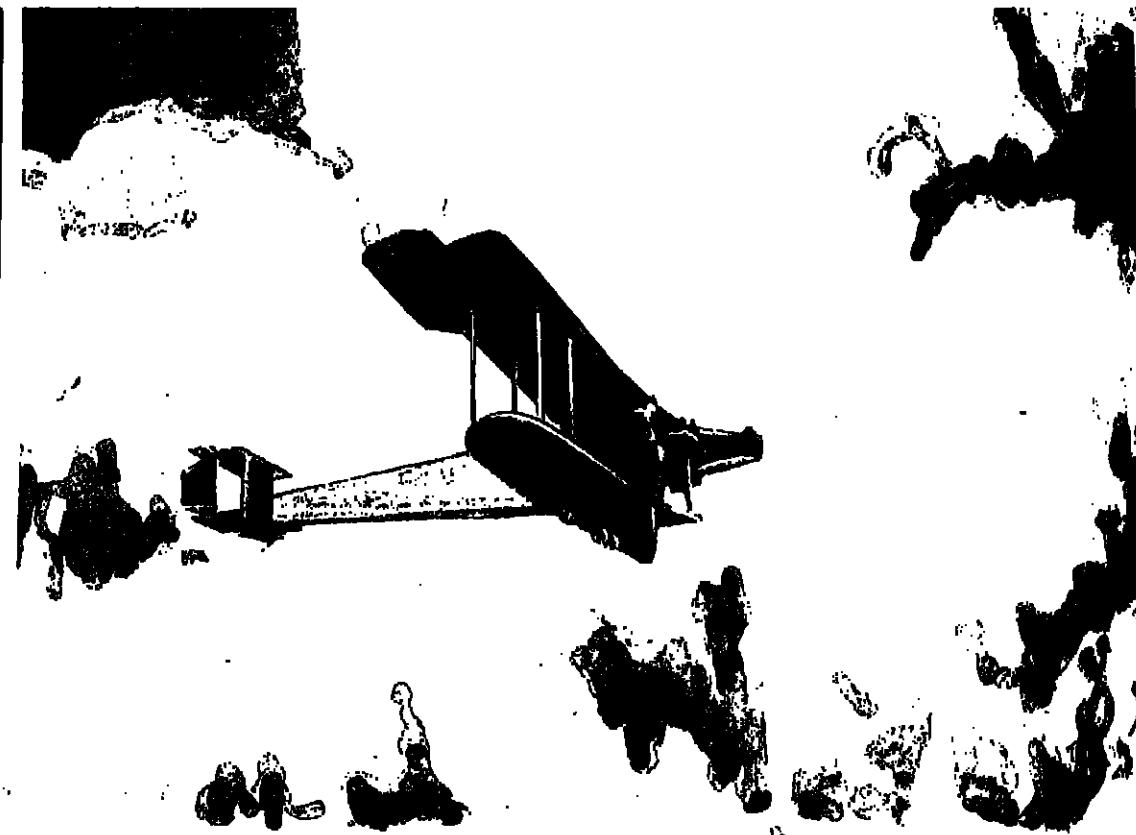
OUR CLIENT WISHES TO RECRUIT AN EXPERIENCED MANAGER TO PLAN AND CONTROL THE SUCCESSFUL COMPLETION OF VARIED AND INTERESTING USER DEPARTMENT PROJECTS.

THE SUCCESSFUL APPLICANT WILL HAVE ALREADY DEMONSTRATED THE ABILITY TO COMPLETE PROJECTS WITHIN PLANNED TIMESCALES AND WILL BE HIGHLY EXPERIENCED IN ACHIEVING SUCCESS THROUGH COMPETENT DEVELOPMENT STAFF.

THE APPOINTMENT IS AN INTEGRAL PART OF THE NEW MANAGEMENT STRUCTURE AND THE SALARY AND CONDITIONS OF SERVICE WILL REFLECT THIS.

**Fraser Williams**  
computer consultants

CONTACT:- K. G. GRIMSLEY  
FRASER WILLIAMS LTD.  
ST. JAMES HOUSE  
VICAR LANE  
SHEFFIELD  
0742 25069



In the early 1900s Thomas Cook offered a break-through to India - by air.

## Now we're breaking the travel barrier with computers

Take Travellers Cheques - once we dealt only in Sterling, now we deal with cheques in 5 major currencies. As part of this major project, Data Base, on-line and distributed processing are all being considered...

Or Holiday Reservations - habits and trends are continually changing. In the light of our future plans, our current Real Time Systems are under review...

Or Foreign Exchange - the floating £ and the uncertain \$. We are computerising this side of our business too, with the installation of Mini computers both in the U.K. and Overseas...

### Commitment.

At Thomas Cook, travel is computer-based. As we plan for the future, our commitment to computers is strengthened in all aspects of our worldwide operation, whether in travel or its associated banking services.

### Scope.

This means opportunities for the men and women joining us at our Peterborough Head Office to involve themselves in an expanding business, with the scope that comes from already being the world's largest travel organisation. We deal with 145 countries, and have more than 900 branches and representative offices worldwide. This international aspect of our organisation offers involve-

ment in many overseas projects including the U.S.A.

### Analyst/Programmers Starting salaries up to £6750.

Positions at all levels for versatile people with strong technical potential and good inter-personal skills. Training will be given where necessary to meet our requirements for IBM main frame technology using AS/400, and for our distributed processing projects based on IBM series 1 and Texas Instruments equipment.

If you think you can offer the relevant experience we would like to tell you more about us and the opportunities we can offer.

Our benefits package includes, at level of appointment, payment for our time, a holiday allowance where appropriate, up to 25 days holiday entitlement, guaranteed housing from the Peterborough Development Corporation. Come and meet some of the people you'd be working with. Then make the project.

### Informal interviews

**Birmingham**  
Holidays: Tue - Tuesday, 13th February, any time between 11.00am and 8pm.

**London**  
Thomas Cook, Berkeley Street - Tuesday, 13th February, any time between 11.00am and 8pm.

If you can't make it but want more information, contact Terry Spence, Personnel Manager, Finance Suite, The Thomas Cook Group, P.O. Box 6, Thorpe Wood, Peterborough PE3 6B. Tel: 0753 63200.

**Thomas Cook**  
The trusted name in travel. Europe.

Thomas Cook, A member of the Midland Bank Group.

## Computer Operators London N14

ICL 1903T 96K 6MT 4EDS60

Johnson Matthey and Co. Limited, leading refiners and fabricators of precious metals, are seeking two Computer Operators. Previous experience is preferred but school leavers of 'O' level standard will be considered.

Applicants with previous experience should preferably have a knowledge of George 2+ and R.J.E. Operators work on two-shift system (7am-3pm/3pm-11pm).

Compensating salary will depend on age and experience plus a shift payment.

Company benefits include free lunches, four weeks' holiday and contributory pension scheme.

To apply please write or telephone Mrs. C.J. Kellegher, Staff Officer.

**JOHNSON MATTHEY**  
100 HIGH STREET, SOUTHGATE  
LONDON N14 6ET. 01-882 8111

## USA PROGRAMMERS ANALYST/ PROGRAMMER

★ \$18,000 to \$30,000 depending on experience

★ Excellent company paid benefits

★ In house training programme

★ Relocation expenses including return airfare

SDA, a highly respected computer consulting company, founded in 1968, is rapidly expanding in New York City, Chicago, Hartford, Connecticut. We require individuals with a minimum of 3 years IBM 370 experience (or equivalent), preferably with a degree, to join our current staff of 250. For consideration in systems design, applications programming and data processing, these assignments will be initially for 18-24 months with the possibility of participating in our international assignments on your return.

To arrange a confidential interview (expenses paid), please write to: SDA, 1000 Broadway, New York, NY 10003, or 1000 Broadway, Manchester, send your c.v. with telephone number and references (travel charges) Roger Barnes on 0625 88176 (10am-5pm, 13/14/15 between 10am and 8pm).

**SOFTWARE DESIGN ASSOCIATES**  
BOX 1907  
Computer Village  
Dorset House, Stamford Street, London SE1

# Computer Operations Professionals Who'll back your expertise to the tune of £7,000,000?

That's the amount Morgan Guaranty, an international corporate bank, have started to spend on future systems and our people at the UK Data Centre in London. With your relevant expertise and our dual 370/148/138, currently utilising DOS/VS, we believe there is no better time for us to get together.

If you have commitment and a genuine desire to succeed, we can offer you a well-structured career and development programme in our operations group. For example, we're looking for:-

**Shift Managers-up to £8,300\***  
**Operations Analysts-up to £6,200**  
**Schedulers-up to £6,200**  
**Data Control Shift Leaders-up to £6,000\***  
**Senior Data Control Clerks-up to £5,500\***  
**Operators-up to £5,000\***  
**Librarians-up to £4,600**  
**Data Control Clerks-up to £4,500\***

\*Includes shift allowance

Additionally we'll offer you our 3% mortgage facility and other excellent company benefits which include an annual bonus of up to 15% of salary, non-contributory pension, medical and life assurance plans, subsidised meals and travel, and an attractive relocation package.

There is only one certain way to discover just how good our offer is and that's by ringing straight into our Data Centre on **01-534 8111** or **01-534 7338** (reversing the charges) and asking for **Ann Delaney**.

There will be people on hand, who talk your language should you have specific technical queries.

If you can't get to a 'phone, write to Ann Delaney at Morgan Guaranty Trust Company of New York, P.O. Box 161, 33 Lombard Street, London EC3P 3BH.

We'll reply by return of post.

**A future for your expertise.**  
**Morgan Guaranty**  
Trust Company of New York

*Handwritten note:* 10/1/78



## DUAL 2960

S.W. LONDON

PRODUCTION CONTROL  
AND OPERATIONS

To £4500 + Shift

A major international service organisation has recently upgraded its computer hardware to dual ICL 2960's. As a result they are now able to offer several first-class opportunities for career advancement.

Within the PRODUCTION department there are currently a number of opportunities at all levels up to Control Supervisor. As a result of a major revision and expansion of this team the Production role encompasses primary user liaison, all off-line control, and the retrieval of run error situations. The successful candidates should be able to offer at least one year's previous experience in a control team, although in the case of the Control Supervisor we are seeking three years' minimum, and the enthusiasm to succeed in a high-throughput and demanding environment.

A SENIOR OPERATOR with two years' 1900 experience will find this an ideal move into a sophisticated 2900 installation. As a key member of a major team the person appointed will be responsible for ensuring efficient machine utilisation, and will become capable of first-level fault tracing. He/she will also be responsible for training and supervising junior operators.

A two shift system is in operation for which a 12½% premium is paid. In the only commercial dual 2960 installation in S.W. London these are rare opportunities to pursue a rewarding career.

Ref. SW1/0802

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants  
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

REDIFON NEEDS  
MARKETING PEOPLE

Redifon Computers, the second largest British-owned Computer manufacturer, is starting a major new expansion programme. This will complement an existing programme that has led to eightfold growth in the last five years.

Career-minded people are now needed throughout the UK for marketing appointments.

## Are you eligible?

2 years' successful experience selling computers?

Good educational background?

Currently earning £9,000-£10,000 p.a.?

Clean driving licence?

Ambitious?

Tick the questions. If you score 4 out of 5 you could be selling the R-Range of data entry

and distributed data processing computer systems within months.

More than that, you could be established in a fast career development plan-backed up by thorough sales, marketing, technical and management training—with the British company.

Don't miss this opportunity to talk about your future. Call today:

Phil Northeast. Tel: 01-680 4756.

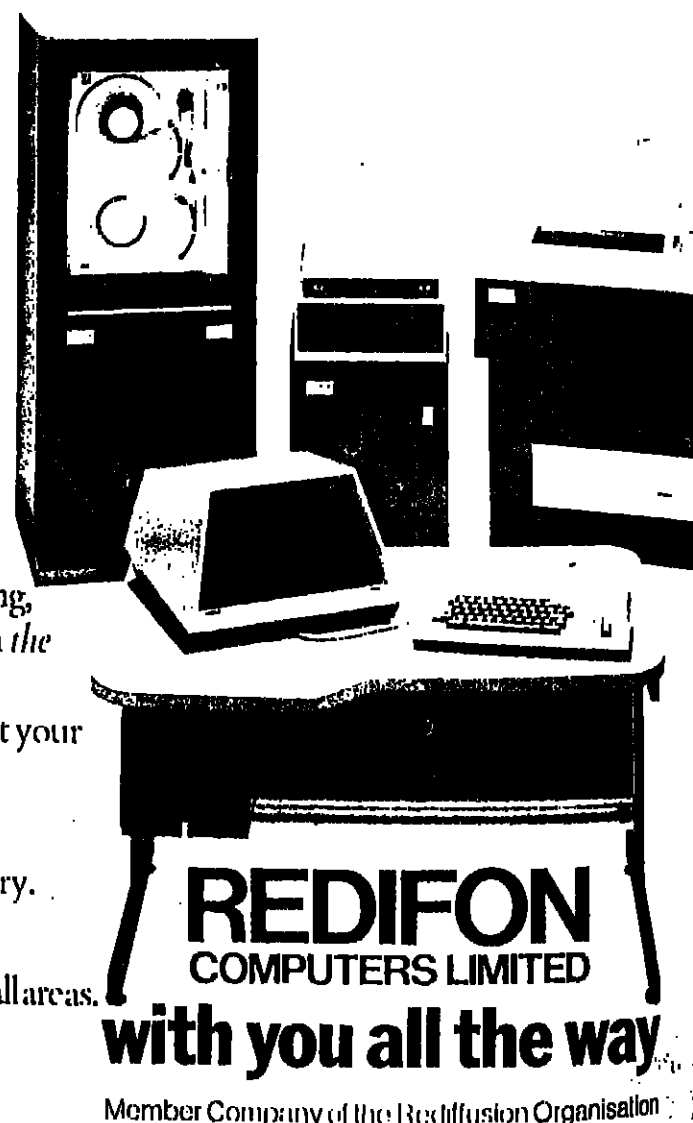
London/South/East Anglia/West Country.

Barry Roberts. Tel: 01-499 6791.

Major accounts and Financial Institutions in all areas.

George Snelgrove. Tel: 061-436 4114.

Scotland/North/Midlands.



**REDIFON**  
COMPUTERS LIMITED  
with you all the way  
Member Company of the Rediffusion Organisation

## Anglian Water Authority

The Authority has installed a dual Honeywell 66/10 3040 its new purpose-built computer Centre at Huntingdon, which is a new two line network and over eighty terminals now being installed in Divisional Offices.

## COMPUTER OPERATORS

Salary: £3,648-£4,038 including £312 p.a. supplement plus 14% for 2-shift working = £4,213-£4,603

Applicants should possess at least eighteen months' operating experience on either Honeywell Level 66 equipment or similar type of computer. Knowledge of Honeywell operating systems is desirable.

The post is located at Brook House, Huntingdon. General relocation expenses are payable in appropriate cases. Application forms, returnable by Friday, 23rd February, 1979, are obtainable from Miss Jenny Spence.

ANGLIAN WATER AUTHORITY  
Diploma House, Grammar School Walk,  
Huntingdon, Cambs. (0480) 56181, Ext. 370

MANAGEMENT &  
EXECUTIVE SELECTION

telephone 01-637 9611

QUOTA EARNINGS  
£15k+ CAR

The sales person our client is looking for will not only have the opportunity to earn the salary stated above with ease as it consists of a high basic, plus an extremely good commission scheme, but will also be directly in line for a lucrative management position.

Ideally, you will have a background in selling minis and/or bureau services and have that special something that sets YOU apart from the crowd.

Ring Tony McGrath for an immediate interview.

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

MANAGEMENT &  
EXECUTIVE SELECTION

THE NEXT  
BIG QUESTION

b180? Do you want the challenge of real time in switching or control systems

? Do you have MACRO, CORAL, FORTRAN, or ASSEMBLER knowledge

YES? We need Systems Designers, Software Engineers, and Programmers for development work on Minis and Micros

WHERE? Particularly in Berkshire/Bucks; Hampshire/Surrey; and Bournemouth area.

I DON'T LIVE NEAR ENOUGH — Worry not, our clients would help you relocate.

WHAT WOULD I EARN? Depending on experience, up to £7½K to start, plus usual big company benefits.

INVESTIGATE YOUR FUTURE phone Derek Pearson now!

## Systems Programmer

Scientific User Support  
UNIVAC 1106

London

up to £6739

Our Scientific User Support Section based in Holborn is looking for a third member to join a team involved in all aspects of the 1106 usage, providing a bureau type service within British Gas.

\* Batch and Interactive Processing

\* Fortran and Cobol

\* OS1100

So if you have

\* A good working knowledge of OS1100

\* Several years programming experience

\* An ability to communicate clearly both verbally and in writing

Contact us today.

The salary, inclusive of Inner London Weighting, ranges from £5335 to £6739 per annum plus current self-financing productivity payment. Please ring W Bradley on 01-723 7030 extension 2475 for further information, or write with full details of age, experience, qualifications and current salary, quoting reference PS/617101 (705), to the Senior Personnel Officer (Hinckley), British Gas, 59 Bryanston Street, London W1A 2AZ. Closing date for applications 22 February 1979.

BRITISH GAS

Programming  
Opportunities  
in a major bank

Co-operative Bank is significantly expanding its computing activities in London and plans to set up a self-contained Development Group which will be responsible for the development, implementation and support for all London-based systems.

Both I.B.M. and Burroughs equipment will be in use and although members of the team will initially concentrate on the separate activities associated with each manufacturer's equipment, opportunities will exist for "cross fertilisation" of knowledge. It is also expected that the team will grow progressively both in size and terms of reference, affording ample opportunity for promotion of founder members. We are looking for:

## I.B.M. Assembler Programmers

minimum 1 year's experience in a commercial field. The equipment they will be concerned with consists of twin 370/135's half megabyte, 3340 disks, 3800 sorter-readers, 3278 V.D.U.'s and the usual other peripherals.

They will have the opportunity to become skilled in the programming of high-speed sorter-readers and will go on to teleprocessing applications, becoming familiar with a

wide variety of systems software and progressing at least to the rank of Systems Programmer.

## Burroughs Systems Programmers

acquainted with B1700/B1860 machines. A small Burroughs real time teleprocessing system will be used to provide specialised services. The applicants will work in collaboration with consultants to implement and then take over responsibility for maintenance and development when satisfied that the design criteria have been met.

Commencing salaries are in the range of £5,000-£5,500 and fringe benefits are commensurate with a Clearing Bank including preferential interest rates for house purchase and assistance with relocation expenses in appropriate cases.

Please write with full details to R. J. Gorvin, Personnel Manager, Co-operative Bank Limited, P.O. Box 101, New Century House, Manchester M60 4EP.

GO The Co-operative Bank

## Principal Programmer

IBM INSTALLATION  
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(Ref. 15/03/79/CM)

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Ideally applicants should have about five years experience with a sound background in the design and programming of communications systems. Although the majority of the work would be in design and development, a willingness to program, when required, is essential.

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Programmers are required with a minimum of one years experience of Assembler on minicomputers, preferably in a real-time or software-type environment. The actual machine is not important as training will be given where necessary. This is a first class opportunity to work on exciting projects using new technology and techniques.

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For further information contact Barbara Hart, SSRC, 1 Temple Avenue, London EC4Y 0SD. Phone (01) 582 6262 ext. 67.

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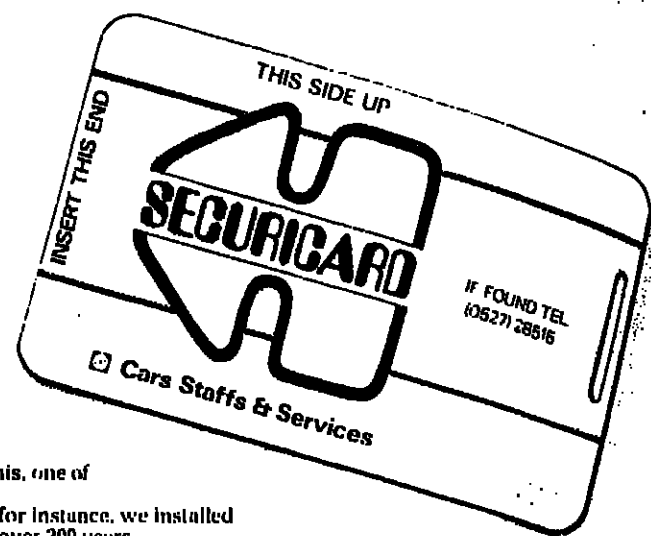
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**Technical Operations Analysts**

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**1. COMPUTER MANAGER**

Salary range: £4101-£6558 (subject to review)

The person appointed will act as Senior Programmer/Systems Analyst in leading a group of programmers responsible for:

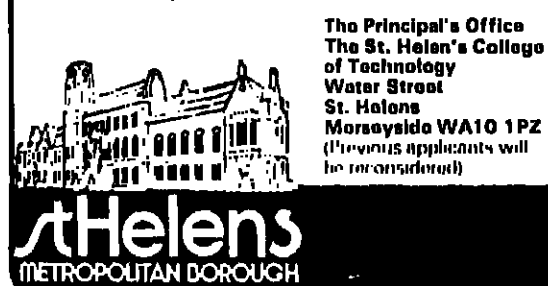
- the routine operation and further development of a terminal oriented (VDU and tele-type) computer service used by academic staff in the teaching of computing throughout the College
- the design and implementation of a computer-based system for college administration and statistics

Programming competence, some experience in systems work, and an enthusiasm to master-mind the provision of a comprehensive College computing service are essential requirements for this post

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Application forms, which should be returned by 22nd February, 1979, are available from:

**University of  
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ADVISER FOR  
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Further information from the Assistant Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Birmingham B15 2TT to whom applications (three copies), including full curriculum vitae and naming three referees, should be sent by Friday, 2nd March, 1979. Please quote ref. CZ1.

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This position reports to the Systems Development Manager. Candidates should have extensive experience of all aspects of systems development in a commercial environment - particularly in the areas of production control and management accounting.

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Candidates need at least 18 months' experience of commercial systems development.

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Salary C £8250 + O/T

You should have in depth knowledge of IBM OS/VS1, JCL, VSAM, be capable of supervising a small team of operations analysts. You will be expected to become involved in new system implementation at an early stage of development and advise on improvements or problems that may occur from an operational viewpoint. You will be required to keep strict control on all changes to existing systems and to advise on possible improvements. Knowledge of COBOL, CICS and IMS would also be an advantage.

**Operations Analyst**

Salary C £5000 + O/T

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Salary C £4000 Inc. s/a + O/T

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You should have 5 years IBM 370 OS/VS1 or VS2 experience and will probably currently be employed as a chief operator or shift leader. Good man-management skills are essential as you will be responsible for an operations team of nine staff.

**Senior Computer  
Operators**

Salary C £4800 Inc s/a + O/T

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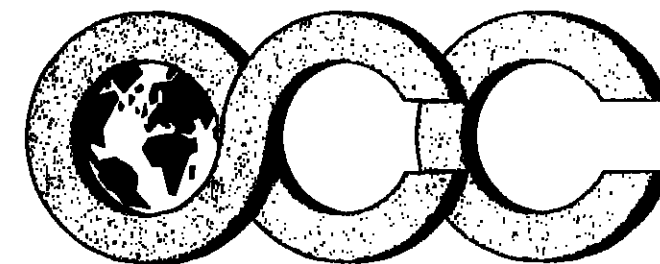
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Hampshire**

Our client, Powell Duffryn Computer Services was originally established to support the diverse activities of the Powell Duffryn Group (turnover c £350 million) which is active in engineering, shipping, fuel distribution, timber, building services, quarries and oil and chemical storage. In addition to the development division which supports internal companies a new division has been formed to supply Timesharing Services, Bureau Services, Turnkey Systems, Manufacturing Control System and Applications software to a wide range of external clients operating in a variety of industries. PDCS is a DEC OEM supplier and one of the largest commercial users of DEC hardware in Europe with three large timesharing DECSYSTEM-10, a DECSYSTEM-20 and PDP-11 minicomputers installed in their new centre at Basingstoke. PDCS are planning significant growth and are seeking additional analysts and programmers to join existing development teams and to establish the additional teams required.

**The immediate requirement is for  
Ten Analysts and Six Programmers**

Analysts should have a minimum of five years' EDP experience of which at least two should be in systems.

Programmers should have a minimum of two years' experience in COBOL, FORTRAN, BASIC or DIBOL. Interactive program development facilities are used in all languages and training will be provided in DEC hardware and software.

**Successful candidates can expect:**

- Interesting varied applications using on-line and database techniques.
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Your background is less important than your desire to realise your potential in an environment which provides scope for growth and recognises and rewards the contribution which you are able to make.

To apply, please write or phone, either to OCC or directly to PD Computer Services.

OCC Computer Personnel Ltd.,  
16 Bedford Row, London WC1R 4EB  
01-242 9356  
Ask for Neville John

or PD Computer Services, Faraday  
Road, Daneshill West Estate,  
Basingstoke, Hants  
(0256) 51821  
Ask for John Bonner

**SENIOR ICL 1900 PROGRAMMER  
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ACT are a fast expanding Computer Services company with turnover well in excess of £3m. Our Bristol Division operates a real-time network over G.P.O. private lines with over 70 videos on customers' premises. In 1979 we are adding Micro Computers to our product range, either bureau linked or 'stand-alone'.

All ACT's products use sophisticated parameter driven packages for financial applications.

We have a need for a Support Programmer to be involved in the development of PLAN programs required by our larger customers on the main frame. In addition, he will be trained to provide programming support in BASIC for Micro installations.

A self-motivated Programmer with a minimum of four years' experience is required. The salary package will be circa £6,750.

Apply in writing or by telephone to:  
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**EDP SYSTEMS 01637 5796**  
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## SYSTEMS ANALYSTS AND PROGRAMMERS

We are retained by clients throughout Northern England to recruit a number of systems analysts and programmers at all levels of experience.

Salaries range from £4,500 for one years COBOL programming experience to £7,000 for project leaders plus relocation expenses and in a number of cases bonus.

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These vacancies are with specific client companies to whom we are contracted. This is not, REPEAT not, an invitation to go on a register.

Contact, by telephone or in writing, Ivor Norton quoting reference CW/79009.

Ivor Norton Management Services Ltd  
Recruitment Consulting Division

P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 68628.

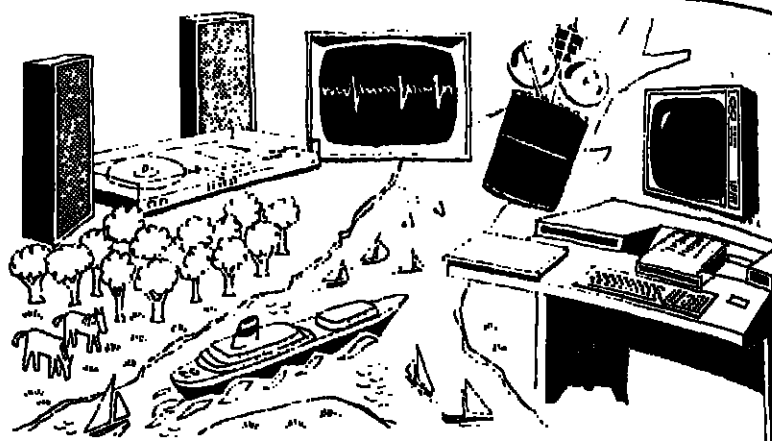
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These posts have been created due to the installation of three major time-sharing systems in a new, purpose-built building. The Consultant will be responsible for all aspects of design, development and maintenance of relevant hardware systems, and will provide advice to our users on hardware matters. The Technician will assist in the development and maintenance of Hatfield designed hardware, and will be responsible for the installation and maintenance of cabling for computer terminals. Although formal qualifications are important the emphasis will be on the relevant practical experience of the candidates. For further details and an informal discussion ring Gordon Brand on Hatfield 88100 ext. 472 or write to The Staffing Office, The Hatfield Polytechnic, P.O. Box 108, Hatfield, Herts., or telephone Hatfield 88100, extension 309. Closing date for applications March 5, 1979.

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Mullard Southampton is a leader in the dynamic world of the silicon chip: we design, develop and manufacture MOS integrated circuits. One of our key areas is the **Computer Aided Design** activity which provides a support to our electrical development engineers. We now offer you the opportunity to join us at the forefront of the micro-electronics world - we need someone (male or female) with programming knowledge and experience in a scientific application, preferably Fortran or Algol, to join our CAD team. The work is varied - ranging from creating systems to programming on a dedicated computer - a 128K word SEL 32/55 computer with Tektronix graphics. You will probably have a degree in a relevant scientific subject with an appreciation of electronics and be able to demonstrate to us a practical aptitude in using computers. Salary will depend on the experience you can offer us and there are excellent fringe benefits, including generous relocation expenses where necessary. Our Southampton plant is situated on the edge of the New Forest and is close to the Solent with its attractive water sports facilities. Please write with details of your qualifications, experience and current salary to: John Wells, Personnel Officer, Mullard Southampton, Millbrook Industrial Estate, Southampton SO9 7BH. Or telephone Southampton (0703) 775533.

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Very few people who come to us have had the chance of spending time in a computer department, let alone a computer department. So opportunity leads to rapid career development.

For example, we have one of the first 4MB IBM 3032 in full operation in the country. We also have a 2MB IBM 370/158. This hardware is running many on-line and batch applications under OS/VS1, VM/CMS, CICS/VTAM and NCP, and our plans include the introduction of MVS and full SNA by the end of 1979.

We make extensive use of optical scanning, microfiche and digital plotting equipment, and our plans for this year include the introduction of laser printers.

Our longer term plans include distributed processing and the extension of our terminal network to over 700 VDU's by 1980 to serve the network above.

Perhaps, most important of all, we are moving rapidly towards the design of database systems.

### Project Manager to £9,100\*

To be responsible for three project teams dealing with a variety of systems. You should have at least eight years' experience including at

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### Project Controller to £8,400\*

To take overall responsibility for successful development and implementation of computer-based systems, controlling a team of analysts and programmers and supporting staff working on a variety of projects. Six years relevant experience and a Degree or professional qualification. Ref. 0.4906A

### Principal Analysts to £7,000\*

A minimum of five years experience coupled with the ability to develop first class working relationships with functional departments are basic requirements. Ref. 0.4906B

### Senior Systems Analysts to £8,500\*

At least three years systems experience and proven experience of implementing a major project is essential. Ref. 0.4906C

### Systems Analysts to £5,000\*

With a minimum of one year or more experience in a commercial systems environment. Ref. 0.4906D

### Assistant Programming Manager £8,400\*

You should have at least five years programming experience, with at least two in a supervisory position. COBOL is a must and ASSEMBLER would be an advantage. Also OS/VS1, preferably with CICS. Ref. 0.4906E

### Principal Programmers £7,000\*

Four years previous experience with some supervisory work. Capable of leading and responsible for a team of programmers working on a variety of projects. You must have knowledge of OS/VS1 and structural programming techniques. Ref. 0.4906F

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All these positions are the result of re-organisation, expansion and promotion. There are excellent working conditions, generous holidays, sick pay, pension and insurance schemes, and a thriving sports and social club.

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**Programmers:**  
Ring Bert Everitt 01-688 4466 ext 6009  
(7.00-8.00 p.m. 01-680 6192)  
If you wish, reverse charges.

Alternatively write quoting appropriate reference to:-  
Personnel Manager, SEGAS, Segas House,  
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# Are you a young, ambitious sales professional? If so, we can make the most of your potential.

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**SA**

Computer Centre

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This post can involve working at any of our three main projects and, therefore, applicants must have their own transport. Duties will include Data Preparation, Batch Control or paper input and the requirement to operate Remco 8000 or Main Frame computer equipment. Includes annual salary ranges from £1,600 to £2,600 subject to experience and qualifications.

A qualification allowance of either £42 or £72 per annum may be payable.

For an application form and further details please contact The Personnel Office, North East London Polytechnic, 109 The Grove, London, E16 7AB. Tel: 01-550 0814. 32 Please send for.

Closing Date: 18.2.79.

**NELP** North East London Polytechnic

## RPG II PROGRAMMER

We are an international organisation within the printing and packaging industry and because of our continued expansion we have recently taken delivery of an IBM System/34 - one of the first to be installed in the North West. We are now looking for an RPG II Programmer of at least one year's experience.

Working closely with the Data Processing Manager you would have the opportunity to expand your knowledge in all areas of computer programming.

Above average opportunities for

career development for the successful applicant (male/female) who must have a sound educational background and the determination to succeed.

We offer an attractive and progressive starting salary and excellent working conditions.

Please ring John Ottaway our Personnel Manager on 0161 799 8131 for an application form or write to him at:

Markem Systems Ltd,  
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**MINI ASSEMBLER PROGRAMMERS**  
North London to £27500

A large international company has undertaken a number of new development projects in the commercial and Real-Time fields, & so require several programmers with at least 2 years experience in commercial applications using Fortran. Any Real Time experience would be of interest but this is not essential since full training will be given. The company offers varied and interesting work coupled with a full range of company benefits.

Reference HK6/1

**FORTTRAN PROGRAMMERS**  
City to £8000 + Mortgage

An International Banking organisation in the heart of London is seeking MACRO ASSEMBLER people with a minimum of 12 months' experience.

The company uses DEC PDP11 equipment, and is currently developing an On-Line System, so any experience in this field would be advantageous. Salaries will be exceptionally good, and the package will include a Non-contributory Pension Scheme, interest free Season Ticket Loans, an annual Bonus Scheme and a 2 1/2% Mortgage.

Reference HK 6/2

**PDP 11 PROGRAMMERS**  
London & Home Counties to £8000

If you have had at least 1 year's experience of programming on PDP 11's we have many vacancies which will be of interest.

Your experience should include programming in either BASIC +/BASIC +2 ASSEMBLER or FORTRAN under RSTS, RSX11 etc. Applications vary from highly technical to commercial and telecommunications.

All positions offer excellent salaries combined with the opportunity to progress in your particular field.

Reference HK 6/3

**IBM OPERATIONS MANAGEMENT**  
West London to £8000

Opportunities available for senior operations people to move into management. You must have either 4 years IBM sys 3 or 2 yrs IBM OS JCL experience. Excellent salaries are offered for these challenging positions.

Reference MH6/4

**IBM 370 OS SHIFT LEADERS**  
West London to £5750

2 large manufacturing companies require shift leaders and senior operators, working either a 2 or 3 shift system. 3 yrs experience including some JCL knowledge necessary. Both companies offer good career prospects and excellent perks.

Reference MH6/5

**IBM 370 DOS OPERATORS**  
All Areas to £4500

Junior and senior operators with 6 mths + DOS experience urgently required, by clients working a full range of shift patterns, including day shift only. All positions offer competitive salaries and some offer subsidised mortgages.

Reference MH6/6

**ICL GII/III OPERATORS**  
East London to £4500

Large installation on borders of the city requires operators with a minimum of 9 mths experience, on any ICL equipment. Perks include annual bonus and staff restaurant. Good career prospects including programming in the future.

Reference MH6/7

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Datascene Recruitment Limited is one of the leading computer Recruitment Specialists handling positions in the computer industry at all levels up to senior management appointments.

We are currently looking for someone to take over existing clients and to seek out new business in offering our recruitment package.

This will involve advising clients on advertising, presentation, verbiage and artwork, and then co-ordinating the response, interviewing applicants and presenting a curriculum vitae of each person. These are forwarded to the client for discussion on which applicants they wish to interview.

We require someone who has a background in either systems analysis or programming, a strong personality, and a flair for being successful.

Company benefits include a good basic salary, bonus and a company car after an initial period. If you are interested and require further details please contact Mike Dauncey on 01-439 1856.



Computing  
Services  
Association

**CONVOL PROGRAMMERS**  
City to £5000 plus Mortgage

A major financial organisation with an expanding ICL 2900 system is seeking several CONVOL programmers. These positions will be ideal for people with 12 to 18 months' experience on any mainframe, and who want ANALYSIS prospects.

The company offers high starting salaries, Season Ticket Loans, Flextime and a Subsidised Mortgage. Reference PG8/9

**PL1 PROGRAMMERS**  
West End to £5500 + Mortgage

A leading commercial organisation with an expanding 370/135 installation in the West End is seeking a number of PL1 programmers to work on a variety of new and existing projects.

The positions are ideal for enterprising young programmers with at least twelve months experience on IBM Hardware. A knowledge of OS/VS1, although not essential, would be a distinct advantage. The company offers a first class salary, and the many generous fringe benefits include Flextime, Season Ticket Loans, and a Subsidised Mortgage.

Reference PG8/10

**RPG II ANALYST/PROGRAMMERS**  
City to £8000 plus Mortgage

RPG II people at all levels are needed for this financial company based in the City. The experience required varies from 18 months to 5 years, covering PROGRAMMERS, ANALYSTS, and PROJECT LEADERS.

TP and Data Base work will be involved, promotion prospects are superb, and benefits include LV's, Free Pension, Season Ticket Loans, and Subsidised Mortgages.

Reference PG8/11

**UNIVAC OPERATOR**  
C. London to £5500-£6000

A minimum of 2 years experience required for large 1100 site. The perks include possibility of mortgage assistance, no nights and excellent career prospects. IDEAL for operator frustrated by stifled promotion and night work.

Reference SO8/12

**UNIVAC SENIOR OPERATOR**  
C. London to £4300

Major manufacturing company requires an operator with a minimum of six months experience on UNIVAC hardware. A good two shift system, no nights, is worked, with ample opportunity for overtime. Perks include travel assistance and cheap company products.

Reference SO8/13

**HONEYWELL OPERATOR**  
All Areas up to £5000

If you have a minimum of one year's level 6B with a good understanding of GCOS and feel underpaid, or your shift system does not suit, don't hesitate to call, there are several companies who could change this.

Reference SO8/14

**DEC PDP SYS 10 OPERATOR**  
S. London to £4500

A large Government department is looking for a PDP operator with a minimum of one year's experience, preferably on DEC 10's. The main advantage is that there are no nights in this post and a good deal of time spent on days only.

Reference SO8/15

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**PERMANENT****ESSEX****Systems Analyst & Programmer to £6.5k**

If you are looking for a dynamic working environment, rapid career progress, and good training facilities based on an IBM Real-Time network located in a country setting where living costs are low, then phone now and enhance your lifestyle. ICW28

**Systems Analyst to £7k**

If you are looking to perfect your Real Time expertise then our Client would be very eager to discuss this with you immediately. Based on a cluster of fast Univac machines the network is currently supporting over 145 terminals. 2CW28

**Systems Analysts/Programmers to £7k**

If you are a good Analyst with financial or manufacturing experience or a competent COBOL or ASSEMBLER Programmer interested in developing large On-Line Real-Time systems then our Client would be very keen to meet you now. Phone for a quick interview. 3CW28

**Senior Analysts to £7k**

A large manufacturing and wholesale Company is seeking persons with sound Analysis experience to develop and improve the business. Based on a large IBM configuration, these opportunities provide you with an excellent chance of furthering your career immediately. Phone now for a good future. 4CW28

**Project Leaders****Analysts****Programmers/Systems Programmers****Shift Leaders to £7k**

Our Client, a large multinational Company using IBM 370 kit under OS/VS1 is looking for persons with sound experience in the various disciplines listed to enable them to undertake major projects both commercial and technical. Please contact us now for a quick assessment of your chances. 4CW28

**Systems Designers to £7k**

If you want really good experience as a Designer then here is an excellent opportunity to do so now. Our Client is looking for persons with good analytical and design capability preferably on IBM kit, to help them with a new development project. Phone now for more details. 6CW28

**Analysts/Programmers to £6.5k**

If you have at least two years good experience in either COBOL, ASSEMBLER or PL1 and you would like to progress rapidly into either Analysis or Project Management or even Software development then our Client would be very interested in talking to you immediately. Several large Company benefits are offered with these very interesting positions. 7CW28

**CENTRAL LONDON/CITY****Project Leaders****Analysts****Programmers to £8k**

If you have two or more years experience on PDP kit and are looking to improve your experience, status and life style then please get in touch with us now. If your experience relates to RSX11 D or M and MACRO 11 so much the better! 8CW28

**Systems Analysts****Senior Programmers****Programmers to £7.5k**

Our Client is looking for a good team to supplement its already growing and fast expanding complement of D.P. professionals. So, if you feel you can 'take the bull by the horns' and make a go of an extremely interesting and also exciting situation which does of course include excellent career progress, phone us now. Programmers need to have good COBOL and the Analysts a sound commercial background. 8CW28

If you can't see anything here that suits you, still get in touch with us — We have many additional well paid vacancies in Essex and the City.

Telephone — John McLean for an up-to-date list of current opportunities on —

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## Communicate with Racal

### Opportunities with Racal Systems Analysts

**RACAL**

The Racal Group are currently leading the way forward in developing systems for many of the ICL 2960 using VME/B. The positions at the Bracknell location offer Systems Analysts the chance to involve themselves in Real-time production, Marketing, Distribution, and Financial Projects, all of which are essential to the continued development of the Racal Group.

The planned TP applications are bringing the various UK sites on-line to the main frame IDMS in use and we have a continuous development plan for the major computers in the group.

Applicants will have a minimum of 18 months experience in systems analysis and involvement with at least one major project is essential. A programming background would be an advantage, as would a professional qualification and BCS membership.

In addition to competitive starting salaries these positions offer over 4 weeks annual holiday, a contributory superannuation scheme and free life assurance. Opportunities for advancement exist in all of these positions.

If you are interested in these vacancies then please write, or phone, for an application form to The Manager, Group Personnel Services, Racal Group Services Limited, Western Road, Bracknell, Berkshire, Tel: 3244 Extn 149.

UNIVERSITY OF LONDON  
DEPARTMENT OF MECHANICAL  
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The Department of Mechanical and Civil Engineering with its Experimental Officer is a public body which is open to all graduates with a degree in Mechanical Engineering or a related discipline. The person appointed will be responsible for the design, construction and operation of experimental apparatus and the supervision of students working on projects. The position is available in the University of London, Department of Mechanical and Civil Engineering, 10, Bedford Way, London, WC1E 6BT. Applications should be sent to the Registrar, The University of London, 10, Bedford Way, London, WC1E 6BT. The closing date for applications is 15th February 1979.



### University of London Computer Centre

#### Communications

The University of London Computer Centre provides a regional computer service to the University of London and to the Universities in the South East and South West of England. The Centre is currently equipped with Control Data 7800, 8800, 6400 and Cyber 72 computers and supports a large communications network of over 50 remote batch terminals and 30 keyboard terminals.

A large overall development programme is planned which will include substantial replacement of the existing equipment in the early 1980's. The Centre is expanding its NETWORK TEAM to implement an existing programme that will give wide Network Access to its existing and future mainframes. The team will also make a significant contribution to new Network Facilities for the University Community. Staff are required for both software and hardware development in the following areas:

#### Large Mainframe Front-ending Advanced Packet Switched Techniques Microprocessor Applications

Posts are available at several levels, and there are opportunities for both those with existing experience and for recent graduates — final year students wishing to make a career in this expanding area.

Candidates should preferably have a degree in the Natural Sciences, Computer Science or Electronics. Salary will be commensurate with age and experience on scales £3,384-£7,754 (under review) plus £450 per annum London Allowance.

The Centre offers excellent conditions of service and operates the Universities Superannuation Scheme. Further details and application forms are available from the Assistant Secretary, ULCC, 20 Guilford Street, London WC1N 1DZ. Applications close 16th March, 1979.

### MICROPROCESSOR APPLICATIONS

BNF Metals Technology Centre, a large international R&D organisation in the metals industry is extending its exploitation of microprocessor devices to further applications including process monitoring and control, automatic safety checks, machine operation sequencing and production control in non-ferrous works. A well-qualified and experienced technologist is required to explore potential applications, design appropriate hardware/software systems and pursue resulting development projects. Backed by other BNF staff in engineering design, control circuitry, and system specification, candidates, male or female, must be capable of acting on their own up to top management levels in initiating and undertaking projects in various parts of industry.

We offer excellent prospects, competitive salary dependent on experience and qualifications and a subsidised staff restaurant. Write for application form quoting ref. AC15 (C-W) to The Secretary at the address below.

**BNF** Grove Laboratories,  
Denchworth Road, Wantage  
Oxfordshire OX12 9BJ

### VIDECOM HENLEY-ON-THAMES.

#### Mini-Assembler Programmers Top Salaries and Worldwide Travel.

Videcom Ltd are manufacturers of the world's first multi-host computer terminal facility with an impressive installed base worldwide, including numerous international airlines and major corporations utilising its products in sophisticated communications networks. Due to continued rapid expansion Videcom urgently require experienced Assembler Programmers.

If you have 1-4 years mini-computer programming experience and live within commuting distance of Henley-on-Thames then this could be the career opportunity you've been looking for.

If the prospect of working on the design and development of software for some of the most advanced communications equipment is appealing then come and talk to us.

Salary is negotiable — we'll certainly pay you your worth and offer you a range of fringe benefits normally associated with an international company. Phone Logistix on 01-491 4636 who are retained as selection consultants or write to Mrs. M. Barker at Videcom Ltd, Newtown Estate, Reading Road, Henley-on-Thames, Oxon, RG9 1HQ.



360 Oxford Street,  
London, W1N 9HA.  
Tel: 01-491 4636

### Technical Author (Software) Technical Author (Hardware)

Applications are invited from men and women with experience in the writing of technical publications (preferably but not necessarily relating to the computer industry) or an interest in documentation and a suitable background e.g. in digital electronics or computer programming.

Successful applicants will join our Wythenshawe Division where we design and manufacture computer systems for a wide variety of applications at home and abroad. Oil field telemetry and control, communications systems and motorway traffic control are typical applications based on our successful ARGUS 700 range of microcomputers. We require comprehensive user documentation of a high standard to accompany our high technology product. To this end our authors work with engineers and programmers in one of our specialist design teams.

Attractive salaries will be offered to the right candidates and opportunities exist for advancement in this expanding area. A productivity scheme is in operation, a bonus being paid quarterly.

The Wythenshawe Division premises are located in a pleasant semi-rural area on the South Manchester/Cheshire border and general working conditions are of a high standard.

Applications in the first instance by letter please to: W.L. Robinson, Ferranti Computer Systems Limited, Wythenshawe Division, Simonsway, Wythenshawe, Manchester M22 5LA, quoting reference 79WD/2CW.

**FERRANTI  
Computer Systems**

### Britannia Building Society

We are a national building society with assets exceeding £1000 million. We are expanding our Computer Development Department and therefore require the following to work at our Head Office in Leek, Staffordshire.

#### SYSTEMS ANALYST (£4572 p.a.-£5850 p.a.)

At least two years' relevant experience required

#### PROGRAMMER (£4168 p.a.-£5010 p.a.)

At least two years' relevant experience required

We have one of the most sophisticated real-time and data processing systems in the building society movement. Our System 4/72 is expected to be replaced by a large 2900 in 1981. Many of our branches are equipped with Datasab mini-computers.

Newton House is situated on the outskirts of Leek, a pleasant town on the edge of the Peak District. Although set in a rural surroundings the office is within easy reach of large towns and cities.

In addition to salary there are several fringe benefits that make our attractive employment package.



Applications forms available from:  
Mrs. J. Washington  
Deputy Head of Staff Department  
BRITANNIA BUILDING SOCIETY  
P.O. Box 20, Newton House  
Leek, Staffs., ST13 8RG

or if you want to talk to technical specialists, ring Leek (0582) 301131 and ask for Geoff Preston (Computer Development Manager).

### WOOTTON, JEFFREYS & PARTNERS

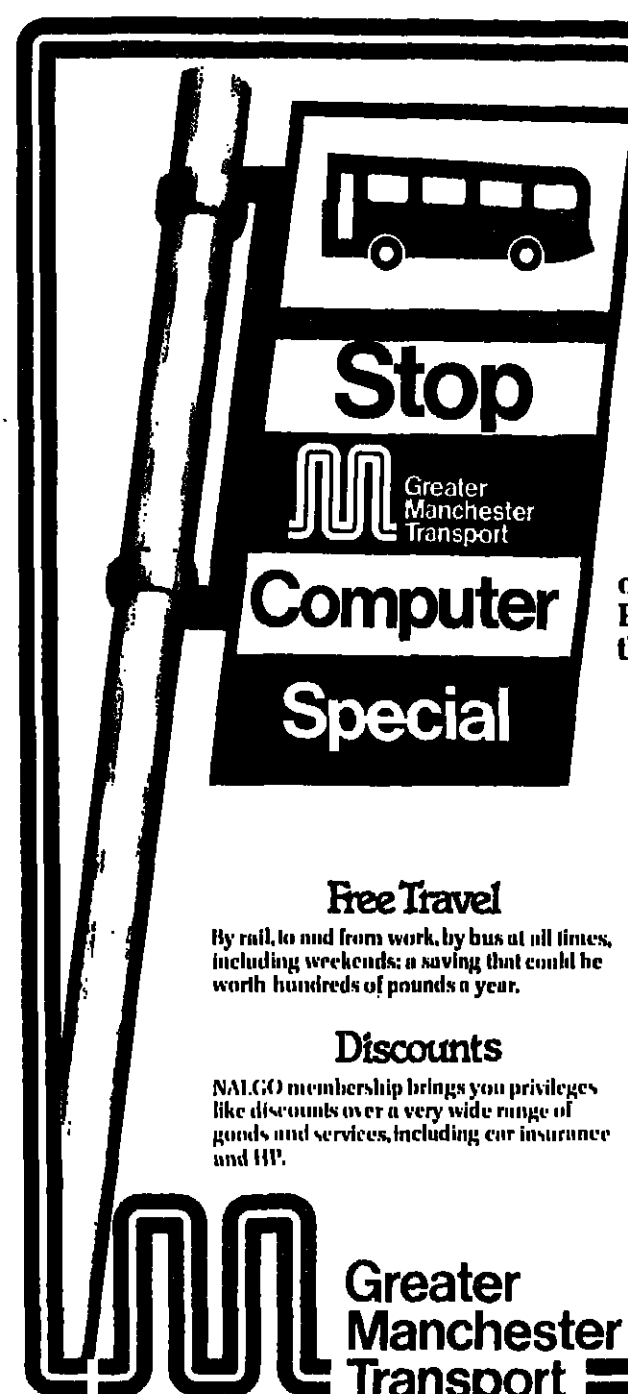
Established in 1971, we are a medium-sized consultancy with offices in Brookwood, Surrey and Manchester. Our services include:  
\* Transport Planning  
\* Computing  
\* Management Science

Our clients include central and local government and companies of all sizes to whom we supply:  
\* Professional advice  
\* Computer packages and Technical Support

The Partnership wishes to expand its computer services in the North West and requires —

**PROGRAMMER/ANALYST**  
for its Manchester based regional office. Successful applicants will be responsible for promoting and supporting the Partnership's activities in the North West and will be involved in the program development work of both the regional and central offices.

Salaries in the range £4,500-£6,000 p.a. depending on experience.  
Please send career details to: Richard Jeffreys & Partners, 4th Floor, 100, Market Street, MANCHESTER M1 3AQ (Tel: 061 275 1241).



## A TAILOR-MADE PACKAGE FOR DP SPECIALISTS

Greater Manchester Passenger Transport Executive is the largest passenger transport operator outside London, serving 234 million people and covering 500 square miles. The Systems and Data Processing Department is now undergoing major expansion. If you are an ambitious dp specialist, join the team and you'll be getting more than just a top salary. Analyse the package for yourself.

#### SYSTEMS DESIGNERS To £6,800

To design and implement cost-effective applications within the Corporate Systems Development Plan.

#### DESIGN ASSISTANTS To £4,500

#### PROGRAM DESIGNERS To £6,000

To prepare program structure specifications, and supervise programmers in implementing them.

#### PROGRAMMERS To £4,500

To write mainly COBOL, but some FORTRAN.

#### Free Travel

By rail, to and from work, by bus at all times, including weekends a saving that could be worth hundreds of pounds a year.

#### Discounts

NALGO membership brings you privileges like discounts over a very wide range of goods and services, including car insurance and H.V.

#### Sports and entertainment

There's a very lively sporting scene, including cricket (Old Trafford), soccer, rugby, tennis, squash and golf. Real beer. Thriving clubland. Some of the folk.

#### Countryside

Some of Britain's most beautiful countryside is within easy reach, including the Lake District, Peak and Snowdonia national parks. And Manchester and its satellite towns offer some of the finest shopping outside London.

#### Houses

We give you generous help in moving; up to £750 to cover the sale of your old house and purchase of the new, temporary lodging allowance, time to house-hunt, etc. And it's possible to live on the edge of the country only 10 miles from the City centre.

Send application or request for further information to:

Mr J S Horsfield, Recruitment Manager  
GREATER MANCHESTER PASSENGER TRANSPORT EXECUTIVE  
2 Devonshire Street North, Ardwick, Manchester M12 6JS.

## Communications Planning

#### Location: Midlands

#### Excellent income plus substantial fringe benefits

Our client, a major manufacturing company with many diverse locations in the United Kingdom, wishes to recruit two people to be responsible for, and deeply involved with, future communications planning.

The two positions require a similar background in terms of past experience and technical skills. In terms of future interest, they are probably slightly different.

The first position will be responsible for maintaining the development of current communications systems and ensuring that these systems are efficient, and can cope with the short term demands of the company. This position will liaise very closely with the second position which is responsible for the longer view and the planning of future communications systems.

Both positions are very important in terms of future company development. In your late 20's or early 30's, your

experience will have included the design and installation of advanced data and speech networks plus systems analysis, and design on small computer systems (telecommunications software). You also should have proven skills covering the areas of planning networks, switching and communications terminals. You will be good at managing people. These positions are not easy to fill, as we are looking for not only the technical skills but the right attitude of mind. However, the career opportunity offered is very good. It is not often one meets a company that is so committed to the development of communications systems. If you are interested in either of these positions, please WRITE to John Goldsmith, setting out in some detail your career to date, and indicate which of the two positions you are most interested in.

Ref. 2223/CW



WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER  
John Goldsmith (Computer Recruitment) Ltd, 15, Buckingham Palace Road, London, S.W.1.  
Tel: 01-828 5356-24 hour answerphone service.

RECRUITMENT  
CONSULTANTS

**JOHN GOLDSMITH (Computer Recruitment) Ltd.**

15/2/79



**Computer Data  
Processing  
Limited**

## EXPERIENCED OPERATORS and CONTROL CLERKS

Salary — £4,400 (with review in June)

Once again our expansion plans — which include the installation of an ICL 2972 in the summer — require us to recruit experienced operators and control clerks.

Our present configuration consists of an ICL 2980 plus 2 x 4772s.

If you would like the opportunity to work with one of the most efficient Operations Teams in the country, please get in touch with us — we pay our staff well but we demand the best so please do not bother to apply unless you are prepared to work hard.

Three shift working is in operation and we offer four weeks' holiday after one year's service in addition to a 32½-hour week (if you could see the operators stagger out of the computer room at the end of their shifts you would understand why we have such a short working week!). If you are good at your job and would like a fresh challenge then why not write to, or telephone

ipc

Alan Merrion  
Operations Manager  
**COMPUTER DATA  
PROCESSING LTD.**  
Oakfield House,  
Perryman Road,  
Haywards Heath, Sussex  
Tel: Haywards Heath 58188

## SYSTEMS PROGRAMMER

**HAMBURG**  
Starting Salary £13,000 p.a.  
An experienced Systems Programmer is required for our client in Hamburg, with a good background in Honeywell 6000, IDS II and teleprocessing applications, plus experience of GATP (Assembler language) and GTS. This post is for a two year period, and financial assistance will be given for moving and living furnished accommodation. Ref: B 040

## ASST D.P. MANAGER

**BEDFORD**  
to £8,000 plus CAR  
Our clients, wholesale distributors of hardware and building supplies, offer an interesting opportunity for an experienced person to take responsibility as deputy to the Computer Manager. Hardware is IBM System 3, 32s (and 34s on order) operating a real-time data-base application. Experience as an RPG II programmer and commercial analyst, plus willingness to travel to user sites is part of the planned expansion in the development of new on-line systems. Excellent benefits and assisted relocation expenses. Ref: B.022

Applications in strictest confidence to:  
Barrie Holland  
**X-CALIBUR CONTRACT SERVICES**  
DUKE HOUSE, 2 DUKE STREET  
BEDFORD MK40 3HR  
Telephone: Bedford 48877

Computing Services Association  
Agency Licence SE(A) 3345  
**X-Calibur**  
-CONTRACT SERVICES-

## SYSTEMS MANAGEMENT

£7,000 to around £8,500

Two key members of our systems team are being promoted as a result we offer a career opportunity for thoroughly experienced men or women prepared for a management role in Systems.

The jobs involve leading a compact team in developing systems for a dynamic Retailing and Distribution environment. The ideal systems expert plus ability to work constructively with senior executives in a variety of functions, and to motivate systems staff.

We have an ICL 2950 with DME, and a short-term conversion programme to VME/86.

Our fast-paced working environment, with subsidised restaurant and discount purchasing facilities, is within easy travelling distance of a wide variety of urban/rural homes in Worcestershire/Warwickshire. We'll pay a displacement allowance should you have to move.

Further career prospects in the company, and in The Birmah Group, are excellent.

Write initially to:  
L. T. Richards, Halfords Ltd., Icknield Street  
Drivo, Washford West, Redditch, Wores.

**HALFORDS**  
A BIRMAH GROUP COMPANY

## CAREERS in SCIENTIFIC COMPUTING and ELECTRONIC ENGINEERING

CHALLENGING OPPORTUNITIES TO WORK ON:

- MICROPROCESSORS
- REAL-TIME PROGRAMMING
- NETWORKS
- LOGIC DESIGN
- INSTRUMENTATION
- ACCELERATOR CONTROL SYSTEMS

Daresbury Laboratory is developing major national facilities in the fields of computer networking, atomic, molecular and biological sciences and nuclear physics. The exploitation of these facilities requires first-class computing support. Computers at the laboratory include an IBM 370/166, GEC 4070s, PDP-11s and Interdatas.

• **COMPUTER NETWORKS:**  
Development and support of communications software for interactive terminal, graphics and remote job entry access to the SRC's computing centres using microprocessor based communications hardware and mini-computer packet switches and front end processors.

• **LOGIC DESIGN:**  
Interface design for mini-computers using the latest microprocessor techniques, also communications interfacing for remote data processing. Specialised design of data acquisition systems.

• **DATA ACQUISITION:**  
Programmers are required for the development of data acquisition systems using LSI and PDP-11 computers connected to an IBM 370/166. There are opportunities to work with large and small systems in a stimulating scientific environment. Relevant programming experience would be an advantage but is not essential.

• **INSTRUMENTATION:**  
Design and development of specialised analogue and digital instrumentation for processing electrical signals from a wide range of charged particle and photon detectors. The most up-to-date facilities for R&D are available.

• **ACCELERATOR CONTROL SYSTEMS:**  
Development of an on-line process control system for the Daresbury Synchrotron Radiation Source (a 2 GeV Electron Storage Ring), using Interdata computers. Experience in programming in both high level and assembler languages, and also in digital interface hardware, would be an advantage.

Applicants should have a good honours degree in a relevant scientific discipline. Appointments will be made depending on qualifications and experience at SO level.

Scientific Officer - £2,839-£4,415  
(Salaries are currently under review)

Closing date: 15th March, 1979.

Please write or telephone: Warrington 85000. Ext. 487, for an application form quoting reference No. DL/85/W.

The Personnel Officer  
**DARESBURY LABORATORY**  
Science Research Council  
Daresbury, Warrington WA4 4AD.

## PROGRAMMER

Salary £5,500 p.a.

We require a Programmer to join our young and enthusiastic Data Processing Team. Our company is extremely successful and we can offer you a secure future, a good salary in the region of £5,500 p.a. according to age and experience, the Pension and Life Assurance Scheme, very attractive staff costs, facilities, a three course meal for 10p a day, and after an initial period a bonus scheme and Mortgage Subsidy Scheme.

The successful applicant must have a minimum of two years' experience and we currently operate a 224K System 3 Model 15D with 24 VDU's on line, and further major enhancements are planned in the near future to keep pace with the Company's rapid growth.

Please ring for an appointment

Tony Batchelor  
Data Processing Manager  
01-804 8161

## Tricity Finance Limited

Lombard House, Southbury Road, Enfield, Midd.  
(A Member of the National Westminster Bank Group)

## Systems Analyst

WEMBLEY — to £6,000 + Bonus.

THE COMPANY — heads a large group in the construction and allied industries.

THE OPPORTUNITY — to establish yourself in a senior role in a small but expanding department.

THE REQUIREMENTS — a minimum of 5 years' D.P. experience (in a commercial environment).

- the ability to communicate with and educate user personnel at all levels;
- experience and ability to take total responsibility for the development and implementation of systems;
- knowledge of D.P. systems based on I.B.M. 3270 (preferable, although we would consider training an otherwise suitable applicant);
- a programming background of COBOL or similar language.

Please write enclosing C.V. to the Data Processing Manager at the address below, or telephone 01-902 5321 if you require further details.

**KYLE  
STEWART**

Ardehol House, Empiro Way, Wembley  
Middlesex HA9 0NA

## OPERATORS

IBM OS £5600  
Chief Operator for an International Company in Essex. Supervisory experience plus good technical knowledge for this post.

IBM OS £5600  
An installation in Central London requires an operator with three years' experience and some shift leader background.

IBM OS £4500  
The salary with six months' experience will be required by Companies in Central London.

IBM DOS up to £5000  
Operators with two years' experience are currently being sought by two installations in West London. Excellent career prospects for promotion to Shift Leader.

IBM SYSTEM 3 £4000  
Financial Institution requires an operator with at least one year's experience.

ICL 2900 £4700  
Operators required for site based in Barks. 1-2 yrs exp. 2900 exp. preferable.

ICL 2900/1900 £4400  
Installations in West London, Middle and Central London offer excellent opportunities for Ops with 1 year's exp. GII an advantage.

ICL 1900 £4300  
Ops required for sites in Essex and Croy. Knowledge of GII or GII essential.

UNIVAC £4600  
Various sites/Shift Operators required for various sites in London. Possibility of travel abroad.

DEC. PDP 11/40 £4000  
One year's experience is required for Central London installation: two shifts only.

DATA CONTROLLERS, ALL AREAS  
£3000-£5000

## TARGA COMPUTER SERVICES

3 LIVERPOOL STREET  
LONDON EC2M 7NH 01-283 2751

## Are you up to maintaining some of the most sophisticated digital systems around?

Enfield based

Eastern Gas currently operate and are developing sophisticated computer based management information systems for its national and international customers.

We are rapidly expanding the field and need a talented and enterprising engineer with computer or digital systems experience to set up and lead a small team specialising in the maintenance of this equipment. If you have an Electrical or Electronics qualification so much the better, but more important is some years' practical experience.

Although based at Enfield, there will be some travelling involved throughout the Region for which a current driving licence is essential. A generous car-mileage scheme is in operation.

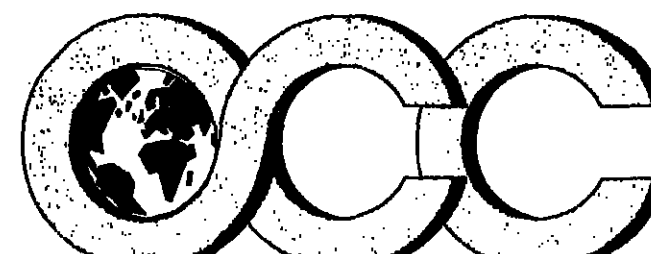
In addition to an attractive salary there is a current self-financing productivity payment and fringe benefits include generous holidays, staff restaurant and sports and social facilities. Relocation expenses will be paid where appropriate.

If you want a new and challenging career with an important Region of one of Britain's leading energy industries then why not write to the:

Senior Recruitment Officer  
Eastern Gas, Star House  
Mutton Lane, Potters Bar, Herts EN6 2PD

Please quote reference 3360/CW.

**EASTERN GAS**



Specialists since 1971 in UK and International computer appointments.  
We have many other jobs on our files and offer a career counselling service to computer professionals.

## Operations Vacancies

Uxbridge

Multi machine Data Centre

- IBM 3031 & ITEL AS/5-OS/VS1
- ICL 1903T - George II
- Excellent career prospects
- Training given on all hardware & software
- Generous relocation package

The Data Centre, which serves the needs of a thriving commercial group, has been expanded by the recent addition of an IBM 3031. This leads to the need to recruit the additional staff listed below. The bureau runs on three shifts - Sunday to Friday and the salaries quoted include shift allowance.

## Shift Leaders £5,750-£6,750

The Shift Leader has reporting to him three senior operators, each of whom is responsible for one mainframe. High level managerial and technical skills are required for these senior jobs. An ideal technical background would be IBM 370 OS/VS1 under VM although a candidate of exceptional drive and supervisory ability with a 1900 George II background would be acceptable. All candidates should have 5 years + operations' experience.

## Shift Technician £5,150-£6,150

The Shift Technician has wide ranging technical duties concerned mainly with IBM JCL, ICL George Macros, etc. It provides an opportunity for a technically oriented senior operator to put his ideas into practice. Previous IBM experience with a good practical knowledge of JCL is required.

OCC Computer Personnel Limited  
16 Bedford Row, London WC1R 4EB

To apply, please write, complete the coupon or ring, asking for Marian Tabone on 01-242 9356 (day) or 01-555 5568 (evenings and weekends). If your experience is suitable, we would like to meet you to discuss matters further. Meetings can be arranged at the Data Centre in Uxbridge if this would be more convenient.

Comprehensive background notes are available to suitable candidates.

## Senior Operators £5,150-£6,150

Each Senior Operator on a shift is responsible for one of the mainframes mentioned above. Candidates should have 3 years' experience and must be capable of scheduling, organising staff and training juniors. A background on either large or medium ICL or IBM mainframes is required. Training will be given to fill in any gaps in knowledge. Rotation between machines will be introduced in the future.

## Shift Librarian £4,300-£5,300

The Shift Media Librarian controls the library on shift. A background in Data Control would be suitable. The main requirements being a very accurate and methodical approach to the work. A good clerical accounting background could be suitable.

Members of  
Computing  
Services  
Association

I am interested in the position.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Tel. Home: \_\_\_\_\_

Work: \_\_\_\_\_

## IMI SUMMERFIELD

Invite applications for the position of:

## Systems Analyst/ Programmer

IMI Summerfield, a member of the IMI Group, carries out research into and development of solid propellant rocket motors. It is situated in a rural part of Worcestershire about two miles south of Kidderminster.

Due to re-organisation within the Computer Section of the Rocket Motor Design and Development Department, a vacancy has arisen for a Systems Analyst/Programmer. The successful applicant will work on an extensive range of projects covering a wide variety of scientific disciplines or management control systems.

Applicants will preferably be qualified to a minimum of Higher National Certificate, together with experience of programming

and/or systems analysis. The preferred programming language is Fortran 4, candidates having in addition some knowledge and experience of using an assembler language may find this to their advantage.

Employment conditions include a profit sharing scheme, up to 23 days annual holiday and a contributory pension fund.

Applications in writing from men and women quoting reference number 1/79/CPW, should be sent to:

The Personnel Officer (Staff),  
IMI Summerfield,  
Kidderminster,  
Wores, DY11 7RZ.  
Knowledge of the  
Kidderminster 4061.

**RSVP**  
RSVP Recruitment  
Minerva House, 29 East Parade, Leeds LS1 5BX  
0532 33911

## Ambitious Programmers

(Our future is your success)  
Various U.K. Locations, to £8,000 + car allowance

To complement the company's further expansion programme, a number of exciting growth opportunities exist within Europe's fastest growing manufacturer of mini-computer based business systems.

Part of a small yet highly professional team, responsibility will be for handling a wide variety of computer problems and packages with particular emphasis on financial and payroll control systems.

The diverse range of products they give rise to is an involvement in new development activity, therefore a flexible approach, together with a positive and practical outlook is essential.

The current management is young and dynamic, and there are excellent realistic career prospects in senior line appointments.

Candidates should have a minimum of 1 1/2 years' computer experience and preferably a good understanding of BASIC + language and a good knowledge of the company's products.

Attractive fringe benefits with relocation assistance if required.  
L. Halliwell, Ref: 1/79/CPW  
Male or female candidates should send their CVs in confidence for a Personal History Form to:  
LEEDS 10321 5075

## PROJECT LEADER

Atcost Limited, one of the U.K.'s leading manufacturers of structural frames, require an experienced Programmer/Analyst to take charge of their computer installation and develop systems within the D.P. environment.

Reporting directly to the Group's Financial Controller, applicants should have solid RPO-11 experience and be capable of dealing with a wide range of commercial applications.

An IBM System 33 is currently being used, but it is planned that on the appointment of a suitable Project Leader, IBM System 34 or other machines will be evaluated to enable a complete upgrade of our applications.

An exciting career opportunity is offered together with a salary of £6000 p.a. and a pleasant working environment in offices overlooking The Penitents in Tunbridge Wells.

If the challenge appeals to you, then please contact:

David Small  
Atcost Limited  
The Penitents, Tunbridge Wells, Kent TN2 5TH  
Tel. Tunbridge Wells 28288

**ATCOST**

## Programmer

N.E. Kent, c. £5,600

This major manufacturing company is currently increasing the capacity of its DP installation to meet projected demand. New equipment to replace the existing 1901 A is being evaluated. Thus an ambitious young programmer will be faced with the challenge of making a real contribution to the development of new systems as well as revising existing applications.

E. Sutton, Ref: 17050/CW

Male or female candidates should telephone in confidence for a Personal History Form to:  
LONDON: 01-734 6852, Sutherland House, 3/6 Argyll Street, W1E 6EZ.

**Hoggett Bowers**  
Executive Search Consultants  
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE, NOTTINGHAM, SOUTHAMPTON, SOUTHEND, TUNBRIDGE WELLS, WOLVERHAMPTON



## Computer Scientist for Research and Development

c. £6,500 South Coast

required by a major international company for its research and development establishment.

You will develop the application of computers to the storage, retrieval and subsequent analysis of data from laboratory experiments, pilot scale studies and factory trials. You will also work jointly with multi-disciplinary research and development teams in establishing both hardware and software specifications of data acquisition systems.

The establishment has terminal access to computers with high-powered capabilities for scientific applications.

You should be aged between 25 and 30, preferably with a 1st class Honours degree in mathematics, statistics and computing, and preferably have sound previous experience of systems designed to handle experimental data.

The salary will be progressive and fringe benefits include flexible working hours, an excellent non-contributory pension scheme and, if appropriate, re-location assistance. The complex is attractively situated close to the New Forest and within easy access of the M27 Motorway and main railway line to London.

Please telephone (01-629 1844 at any time) or write for information. Ref: FY.8593.

*This appointment is open to men and women.*

**AGL CONFIDENTIAL RECRUITMENT** 17 STRATTON STREET LONDON W1X 6DB  
A member of MSL Group International

Oxford and Cambridge  
Schools  
Examinations Board

### COMPUTER OFFICER

The Board has transferred some of its examination administration to the IBM 370 computer of another Board, using Assembler and Cobol, and plans further transfer. An experienced officer is required to work in Cambridge on the development of new programs and control of those in use.

Stipend £5128-£7030 (Cambridge University Computer Officer Grade 2)

Further information from, and applications to The Secretary, Oxford and Cambridge Schools Examinations Board, 10 Trumpington Street, Cambridge by 14th February, 1979

### TECHNICAL SUPPORT OFFICER up to £5,358

The duties of this post are to supply technical support to the production team, and also the VME/8 operating system to be used on the Council's ICL 2960. The job will primarily be to assist the Chief Technical Support Officer in the creation and maintenance of a satisfactory operating environment. At least 1 year's support experience is required.

Application form from Personnel and Management Services Officer, London Borough of Greenwich, Peggy Middleton House, 60 Woodwich New Road, London, SE18 8HQ. Tel 01-854 8888 Ext 2119. Closing date: 23rd February, 1979.

The Council is an equal opportunities employer. All applicants will be considered, irrespective of sex or country of origin.

GREENWICH

## ELECTRONIC ENGINEERS

SMITHS INDUSTRIES LIMITED AVIATION DIVISION have openings in their Research & Engineering Department which will appeal to Engineers who seek a challenging and rewarding vocation. If you are interested in any of the following fields:-

- \* DIGITAL HARDWARE/ SOFTWARE (REAL-TIME COMPUTING)
- \* ANALOGUE HARDWARE
- \* CONTROL SYSTEMS (ANALYSTS & DESIGNERS - FIXED AND ROTARY WING AIRCRAFT)
- \* COMPONENT APPROVAL

we have vacancies at various levels in these Design Branches:-

- FLIGHT DECK INSTRUMENTS
- FLIGHT CONTROL SYSTEMS
- TEST EQUIPMENT
- FLIGHT CONTROL RESEARCH
- ELECTRONIC DISPLAYS
- ENGINEERING STANDARDS
- MICRO ELECTRONICS
- COMPONENTS ENGINEERING (GYROS & ACCELEROMETERS)
- WEAPON SYSTEMS (AVIONIC & NAVAL)

Applicants should have preferably a Degree with a minimum of two years experience although relevant experience or other qualifications in lieu would be considered.

Write to H. Upson, SMITHS INDUSTRIES LIMITED



AVIATION DIVISION  
Bishops Cleeve, Cheltenham, Glos. GL52 4SF.  
or use our ANSAFONE facility:- (0242-67-5359)

## WALK IN TO A NEW CAREER

Senior Analysts, Chief Programmer, Senior Programmers, Analysts/Programmers, Operations Staff.

\* Big Salaries to £8,000

\* Big opportunities for personal growth

If you have worthwhile data processing experience we can almost certainly talk career and money sense to you. If you have a specialisation such as systems programming, minis, PERT or communications our client may be able to create a suitable position to make the best of your skills. We hope you will come and talk to us at one of our successful informal interview sessions at

The Grampian Hotel, Stevenage New Town Centre.

Saturday 10th February 9.30a.m. - 1.00p.m.

Monday 12th February 5.00p.m. - 9.30p.m.

Our client is a successful manufacturing company with an expanding computer department. They have a range of opportunities and an organisation which will allow you to develop your career according to your aptitudes.

Salaries are excellent. A productivity scheme is in operation and the company will give generous help with relocation costs where appropriate.

If you cannot make these dates, call us anyway and we will send you an information pack.



Castle Computer Services Limited

271 Highgate Road, London, NW4 3JH. Phone (04427) 73151

## Software Engineers

Ferranti Computer Systems are expanding their Software Engineering Organisation to meet the immediate challenge of large new contracts for high technology applications.

Vacancies exist at locations in Bracknell and Yateley, and in Cwmbran, Fareham and Weymouth.

Our spectrum of work covers

- Multicomputer Systems
- Fire Control Systems
- Simulators
- Navigation Systems
- Microprocessors
- Radar Data Processing
- Coral
- Mascot
- Software Methodology

If your expertise covers one or more of the areas listed and you would like to extend your experience into new projects, please telephone our Recruitment Office on Bracknell 3232, ext. 471, or write quoting ref. no. D/893/CW to:

Personnel Officer, Ferranti Computer Systems Limited, Western Road, Bracknell, Berkshire.

*This job is open to men and women.*

**FERRANTI**  
Computer Systems

## SALES ENGINEERS CAD CAM GRAPHIC SYSTEMS

### COMPUTERVISION

Due to continued growth, Computer Vision Ltd. — the major supplier of minicomputer based graphic systems — are currently looking for two sales engineers. Our customers are some of the biggest and best in Europe.

We are seeking enthusiasts with experience in either of the following:

- \* Technical bureau sales
- \* Graphic or plotter systems sales
- \* Cad cam user
- \* Technical computing consultancy
- \* Above average salary
- \* Quality company car
- \* Free membership of BUPA
- \* Opportunity to join a successful team in a highly exciting growth period

For further information please call or write to David Jones, Computer Vision Ltd., Computer Vision House, Park Street, Buxton, Derbyshire. Telephone: High Wycombe (0494) 714771

## OVERSEAS DEVELOPMENT

KNOW-HOW: vital to developing countries

### Data Processing Adviser

Ethiopia

required to strengthen statistical and data processing capacity within the Central Statistics Office. Applicants should be over 25 and have extensive experience in statistical applications preferably using IBM System 3.

Appointment 2 years. Salary according to age and experience plus tax-free overseas allowances in range £1890-£4985 p.a. (Ref. 328X).

The post is wholly financed by the British Government under Britain's programme of aid to the developing countries. In addition to basic salary and overseas allowances other benefits normally include paid leave, free family passages, children's education allowances and holiday visits, free accommodation and medical attention. Applicants should be citizens of the United Kingdom.

For full details and application form please apply, quoting reference stating post concerned, and giving details of age, qualifications and experience, to:



Appointments Officer,  
MINISTRY OF OVERSEAS DEVELOPMENT,  
Room 301, Eland House,  
Sieg Place, London SW1E 5JH

HELPING NATIONS HELP THEMSELVES

Recruitment



in Informatics

## Jnr/Snr/Mini/Micro Specialists Denmark

Salaries: £10K — £15K

Our client is the leading Scandinavian Systems and Software Development Group recognised as Market Leaders in its field. Owing to continued expansion in a wide variety of applications areas including Data Communications, Message Switching, Computer Networking and Mini Computer Software, a significant number of experienced career oriented personnel are urgently required.

Emphasis will be placed on technical involvement and in-depth experience in the areas of activity outlined above. Whilst a degree or equivalent qualification in either Computer Sciences or Mathematics is desirable, significant relevant experience will be considered in lieu. Of essence is a

solid Assembler background within a Mini Computer or Microprocessor environment. Project locations are primarily in Copenhagen and suburbs although candidates can work (should they so desire) in the Netherlands, Sweden or Germany. Of prime importance is demonstrable enthusiasm to relocate to Denmark for an extended period. Every assistance will be given in relocation, including the cost of removal of all personal effects, initial accommodation expenses and a resettlement allowance. Interviews will be held as soon as applications are received and offers of employment will be made within 10 days of interview.

## Analysts & Programmers Inner/Greater Manchester

Salaries: c £6K - £8.5K

Our client is a major International Company recognised as market leaders in its field and has retained Logistix to assist in recruiting the following key project team members — Real-Time Mini Programmers, Data Base Designers, Communications Programmers and Applications Software Programmers. Experience of any of the following will be especially welcome: RSX 11, RPL 2, Assembler, PL 1, COBOL, IMS DB-DC. For those who enjoy overseas travel there will be ample

opportunity to work at the company's E.F.C. offices in Sweden and the Benches. Successful candidates must demonstrate qualities of leadership potential, determination and be self starters. It is expected that all staff should have the ambition to achieve Project Management status quickly. Interviews will be held at one of the company's three UK offices most convenient to the candidates residence.

## RSX 11 Programmers Netherlands

Salaries: £10K - £15K

Many of the forefront developments in Mini Computer Software and Data Communications are emanating from Europe and it is now time to move into a new era of development. The opportunity arises to join a highly reputed Systems and Software Development group engaged in a major project in the areas of Data Communications, Message Switching, Networking and Process Control. Existing and new project teams require Consultants, Systems Designers, Senior Analysts, Analyst/Programmers and Programmers with relevant experience in at least one of the above areas of activity. In particular, extensive Mini Computer Assembler experience is essential. Successful candidates are likely to be aged between 22 and 35

years with a degree or equivalent (Computer Science or Mathematics) and extensive experience in the above areas. You will most certainly contribute a valuable expertise to the industry group and expand your own threshold of experience through working closely with other professionals at your own level. Our client will pay full relocation expenses for you and your family and provide a generous resettlement advance in addition to meeting the costs of temporary accommodation pending location of permanent housing. Numerous other benefits contribute to make this a very attractive opportunity.

## Scientific Programmer Italy

Salary: £10K - £12K

THE CLIENT: A multi-national Research and Development Institution is further expanding its team strength in the areas of scientific project implementation and requires several permanent scientific Programmers with Mini Computer Assembler or Fortran experience. Incidentally, we particularly wish to speak to candidates with current or very recent HP 2100 involvement.

THE APPLICATIONS: A wide variety of projects is currently being developed for implementation in the early '80's. Specialist skills in the areas of one or more of the following are especially useful:

Numerical Analysis, Image Processing and Operational Research. The scope and involvement of these applications is likely to be both challenging and interesting and is certain to push the horizon of technical sophistication to the limit. THE PACKAGE: In addition to a very realistic salary the company also provides full relocation expenses, medical insurance and pension schemes as well as initial paid accommodation expenses for you and your family. Interviews will be held in London during mid and late February and offers will be made by the end of the month.

## Small Machine Programmers Central & N.W. London

Salary: £5.5K - £8K

A European manufacturer of V.R.C. and Office Business Systems seeks several additional Programmers and Systems Analysts who will be engaged in developing several new challenging commercial applications. The opportunity also exists to develop into IBM mainframe projects at a later date. Suitable applicants must have current experience of writing Programs primarily in BASIC and secondly Business Assembler within the environment of a

Software house/turnkey supplier or manufacturer. Particular hardware experience is much less important but generally knowledge of Kleinze, Nixdorf, Olivetti or Philips is significant. Salaries are above market rates and in addition to a comprehensive range of Company benefits including contributory pension scheme, sickness benefit, Project bonus and 4 weeks annual holiday. Interviews will be held in London in February and March.

Logistix, Freepost 32, London W1E 3YZ

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PROGRAMMERS  
ANALYSTS  
TEAM LEADERS AND  
PROJECT MANAGERS

Naturally we'd like to meet anyone who's interested. And we'd like them to meet us. That's why we're holding an informal evening on Monday 12th February at the Regent Palace Hotel, Piccadilly, London.

By popping in for a drink between 4.30pm and 8.00pm not only will we get the opportunity to meet you but also you'll get a chance to really meet us and find out all you'd like to know about our company. And we think that's important.

We're situated in central Swindon, Wiltshire but only 10 minutes from Junctions 15 and 16 on the M4 and under an hour from London and Bristol by high-speed train. You can live in reasonably priced housing perhaps in the Cotswolds or Wiltshire Downs and forget about traffic jams and long commuter rail journeys. Also you can work on ICL New Range Equipment.

We can offer competitive salaries, a non-contributory pension scheme plus a generous staff discount scheme, and relocation expenses where appropriate. So come along and find out for yourself what on offer. The chances are we'll have just the job you're looking for.

If you're unable to come along on the 12th but would like to know more about our vacancies please telephone Richard Braybrook on (0793) 36271 or write to him at Book Club Associates, Bridge House, Parkway Street, Swindon, Wiltshire.

## for great opportunities in data processing

## Computer Operations

### Your chance to stop working those shifts

We wish to recruit someone to be responsible for our in-house computer operations facility. Shift working is not involved. This is a new position and the main task will be to improve and extend the present facility which also includes a data preparation service and software library. The ideal candidate will already be working in a similar environment. Ideally with DEC hardware (ours are PDP 11s and PDP 8s) and currently earning between £4,000-£4,500. He or she will be:

- \* Looking for the responsibility that comes with managing people.
  - \* Interfacing with user departments at all levels.
  - \* Able to define standard procedures and get them established.
  - \* Familiar with software and programming languages.
- If you would like to know more please contact us.



Wendy Village, Personnel Department  
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A member of the George Kent Group of Companies

### SHIFT LEADER

Up to £8,039 p.a.

A Shift Leader is required to lead a team of operator/control clerks who will run the ICL 2980 soon to be installed in Woolwich. A good practical knowledge of either VME/B or System 4J level is required as well as at least three years in senior operating posts. A two-shift system will be worked and the salary quoted includes the appropriate allowance.

Application forms from Personnel and Management Services Officer, London Borough of Greenwich, Peggy Middleton House, 50 Woolwich New Road, London SE18 6HQ (Tel: 01-854 6888, Ext. 2118). Closing date: 23rd February, 1979.

The Council is an equal opportunities employer. All applicants will be considered, irrespective of sex or country of origin.

GREENWICH

### UNIVERSITY OF BRADFORD

Computing Laboratory  
SENIOR COMPUTER OFFICER

Ref. CUSCO/95W  
Applications are invited from graduates or professionally qualified persons for a post in the University's Computing Laboratory which operates a large ICL 1904S installation providing a central service for research and teaching within the University. The successful applicant will head a team of three Computer Officers responsible for the George 3 Operating System and associated software and will report directly to the Chief Computer Officer. The post requires programming experience and knowledge of George 3. Salary on scale £3,383 to £7,745 p.a. (under review). Applications should be sent to the Personnel Officer, University of Bradford, BD7 1DP.



## COMPUTER RECRUITMENT DIVISION

### OPPORTUNITIES FOR ANALYSTS & PROGRAMMERS

Ref.	Mfg.	Job	Experience	Location
6001	IBM/OS	Senior Programmer	3 yrs. COBOL/ASSEMBLER	City
6005	IBM/OS	Programmer	3 yrs. COBOL/PL1	SW London
6076	IBM/OS	Project Leader	3 yrs. COBOL Team Leader	Midx.
6076	IBM/OS	Analyst/Programmer	3 yrs. COBOL	Midx.
6101	IBM/OS	Programmer	2 yrs. COBOL	Surry
6108	IBM/OS	Analyst/Programmer	2 yrs. PL1/ASSEMBLER	City
6110	IBM/OS	Programmer	18 mths. PL1/ASSEMBLER	City
6005	ICL/G2	Systems Analyst	3 yrs. Systems (large mainframe)	Midx.
6008	ICL/G2	Senior Analyst	5 yrs. Systems	Midx.
6009	ICL/G2	Senior Programmer	3 yrs. COBOL	SW London
6022	ICL/G3	Senior Programmer	3 yrs. PLAN	Midx.
6087	ICL/G3	Programmer	2 yrs. COBOL	West End
6091	ICL/G3	Senior Programmer	3 yrs. COBOL/PLAN	Midx.
6112	ICL/G3	D.P.M. Designate	Commercial Systems	SW London
6024	BURROUGHS	Programmer	plus RPG II 1 yr. COBOL (any machine)	City
6080	NCR	Senior Analyst/Prog.	2-3 yrs. Systems + RPG II/COBOL	SW London

FOR INFORMATION ON ANY OF THE ABOVE VACANCIES:

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### LEBUS UPHOLSTERY

requires an ambitious

### Analyst/Programmer

at the Reading headquarters of Britain's largest single Upholstery unit.

This is a challenging position in a small management services department using an ICL 2903 with EDS 30s on order for on-line developments.

The successful applicant will need a minimum of two years' RPGII commercial programming experience and will have the early potential ability to take personal responsibility for user orientated projects from systems investigations, analysis and design to programming, testing and implementation.

Salary c. £5,000 per annum.

Applicants (male/female) are invited to apply giving brief details to:

A. M. HOWARTH, Company Secretary  
Lebus Upholstery Limited, P.O. Box 7  
Woodley, Reading, Berkshire

### 2950 VME/K

The professional team making our new 2950 talk need more Analyst/Programmers and Programmers

### ANALYST/PROGRAMMERS

will join Systems teams working on a Systems/Programming mix. Experienced, commercially-aware Programmers will find this a splendid introduction to full-time Systems work. Initial salary up to £5,250 depending on experience. Tony Russell is the Systems Manager to contact.

### PROGRAMMERS

will join a compact Development, Maintenance and Operating Systems team (George 2 now VME/K to come). COBOL knowledge would be useful, but not essential; we'll train you. Salary up to £4,500. Barry Walker, Technical Manager, is the man to contact. In both cases, planned projects cover all aspects of a vibrant multiple retailing organisation. Career prospects in the company, and throughout the Burmah Group, are excellent. Telephone or write to: Tony or Barry at Halfords Ltd., Island Road, Warrington, Cheshire, WA9 6JF. Tel: 0925 27601.

### HALFORDS

A BURMAH GROUP COMPANY

### ANALYST/PROGRAMMER

Move forward with us and you'll never look back

In 10 years, we have become one of the most respected and successful companies in our field. To meet the current demands from our clients in commerce, industry, government and education we need a National Analyst/Programmer. You should have a thorough understanding of at least one of the major ranges of computers and hardware and the ability to extend your experience into new areas. You'll have the opportunity to work on every aspect of a system: analysis, design, programming, development and testing, implementation, and liaison with programme users. As one of our front line staff you will be thoroughly professional, able to report independently, work without supervision and impress clients with your technical knowledge, experience and efficiency. Working in a challenging environment you'll enjoy a salary of c. £7,000 plus company benefits and excellent promotional opportunities. Write or phone with brief career details to: Fraser Williams Computer Consultants, Fraser Williams (Europe) Ltd., 24 Warren Street, London W1P 5PD. Tel 01-3881 8330.

## Fraser Williams Computer Consultants

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### LIVERPOOL POLYTECHNIC

DEPARTMENT OF MATHEMATICS

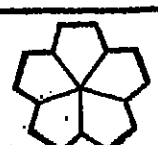
### RESEARCH ASSISTANT

Applicants are invited from suitably qualified persons to undertake research in the field of mathematical operations. Candidates should have a first degree in Mathematics and/or related subjects and will be expected to register for a higher degree.

Salary: £2,311-£2,487 + £215 p.a.

Applicants should send their curriculum vitae to: The Staffing Administration Officer, Bendigo College of Advanced Education, P.O. Box 180, Bendigo 3550, Australia. Phone: (054) 43 1877.

Applications close on February 22, 1979.



### SOUTH WEST UNIVERSITY

REGIONAL COMPUTER CENTRE  
University of Bath

### ICL 2980 SYSTEMS PROGRAMMER

The Regional Centre (SWURCC) runs a large ICL 2980 system providing a multi-computer communications network serving Bath, Bristol, Cardiff and Exeter. A vacancy exists in the Systems Development Group, which is responsible for developing the system and providing technical support for the operating system, VME, and the communications network. The successful candidate will be responsible for the development and testing of the system and will be expected to register for a higher degree.

The ideal candidate must be willing to become an expert in the VME/B and to provide solutions to complex problems. The successful candidate will be responsible for the development and testing of the system and will be expected to register for a higher degree.

Salary will be at a point determined by experience and qualifications. £3,855 to £5,555 (under review).

Application forms and further details should be sent to: The Staffing Administration Officer, South West University, University of Bath, Claverton Down, Bath BA2 9AY. Tel: 01225 318111.

Closing date for applications is 22 February 1979.

# MYRIAD

## ANALYSTS AND PROGRAMMERS

### DEVELOPMENT PROJECTS NEW 2970 INSTALLATION

### CENTRAL LONDON

Our client has recently installed a dual ICL 2970 configuration to replace their 1900 series hardware and are now ready to embark on an impressive schedule of major new projects. They can therefore offer Analysts and Programmers the opportunity to develop systems that are stimulating, by virtue of their unusual nature, and rewarding in that they will extend skills and broaden experience by using some of the most advanced computing techniques available.

The company are able to offer very competitive salaries backed by a range of benefits including formal training, a pension scheme, season ticket loan, staff restaurant and sports and social facilities.

The computer department is housed in the London head office and comprises a complete suite of purpose designed accommodation. It is particularly convenient for Southern Region main line travel centres and easily commutable for most other areas.

### SYSTEMS ANALYSTS £6000-£6750 PROGRAMMERS £5250-£6250

We are seeking people with around three years' experience in the industry who have gained some analytical involvement and now wish to extend their skills working as a member of a highly qualified team in a development environment.

Applications are invited from Programmers with around two years' COBOL on any machine. They will join teams where they will gain total project involvement and will have the opportunity to use some of the most advanced hardware and software available.

Ref. SE1/0802

### MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA  
01-353 0981 24 HRS.

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INCOME TO **£17,000** TAX-FREE (base around £12,000) **\* COMPANY CAR**  
**\* FURNISHED FLAT (family/bachelor)**  
**\* OTHER BENEFITS**

OUR CLIENT is a long-established and successful agent for many types of industrial products, including business equipment. Among these are the smaller disk-based business computers of a major mainframe manufacturer.

KUWAIT is the second largest exporter of oil in the world and has a very healthy economy, many thousands of expatriate workers being employed there. Social facilities include several cinemas (which show English-speaking films), restaurants and sports clubs, where tennis, squash and swimming are available.

JOB RESPONSIBILITIES: to manage the computer marketing operation in Kuwait, where there is a fast-expanding market for such products.

### REQUIRED PROFILE:

1. Good experience of selling business computers having a U.K. installed value of around £15-£40,000 to commercial organisations.
2. Experience of managing a sales zone or controlling selected accounts.
3. Good knowledge of commercial applications.

THIS CAREER OPPORTUNITY OFFERS THE PROSPECT OF BUILDING VERY CONSIDERABLE SAVINGS

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consultancy division

01-540 8311

24-hour answering service

Ref: CW.944



# In NOVAKCHOTT there is no shortage of GOBLOC ERAMMSPORS.

However, in South Hertfordshire they are not so lucky. Our client, one of Britain's foremost industrial concerns, requires two COBOL programmers to join its team, working on a number of new Real Time on-line stock and project management systems.

Programming development is handled by ICL 1900 equipment operating under GEO III.

Candidates for these positions should possess around three years COBOL experience, preferably gained from within a commercial environment, and although not critical, any knowledge of PERT would be an added advantage.

Apart from an excellent negotiable salary around £6500, there are a number of fringe benefits, which include:

- Staff restaurant
- 4 weeks holiday
- Sports and social club
- Assistance with re-location
- Pension and insurance schemes

For more information, ring Stuart Winfield on 01-402 9332 (24 hours) now, as these positions make sense in any language.

Computer Resources Recruitment, Thorndike House, 70-76 Bell Street, London NW1.



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Computing  
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## AT&T COMPUTER RECRUITMENT DIVISION OPPORTUNITIES FOR OPERATORS

Ref.	Mfg.	Operating System	Job	Experience	Location	
6017	IBM	OS/VS1	Shift Leader	5 Years	Middx.	£8,000
6018	IBM	OS/VS1	Operator	2 Years	Middx.	£4,600
6034	IBM	DOS/VS	Chief Operator	3 Years	W. London	£6,200
6036	IBM	OS/VS1	Senior Operator	5 Years	W. London	£5,500+
6062	IBM	OS/VS1	Operator	12 Months	Middx.	£4,650
6102	IBM	DOS/VS	Operator	18 Months	Surrey	£4,250
6040	ICL	SH	Operator	12 Months	W. London	£4,300
6055	ICL	MANUAL	Operator	12 Months	C. London	£4,500
6096	ICL	SH	Senior Operator	2 Years	S.W. London	£4,500
6049	NCR	Any	Operator	12 Months	S.W. London	£4,000
6084	UNIVAC	Exec 8	Operator	2 Years	S.W. London	£ Neg.
6108	UNIVAC	Exec 8	Operator	2 Years	N.W. London	£4,800+

FOR INFORMATION ON ANY OF THE ABOVE VACANCIES:

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All classified copy should reach our offices no later than 6.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

When you're helping to  
brew Jack Hobson's  
pint, you need the  
best software  
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### REAL TIME SYSTEMS DEC • RSX • INTEL

You'd be surprised at the people who rely on our expertise in the design of advanced computer systems and all the things they rely on us for.

We need a number of software staff at all levels to work on advanced projects both in a development environment and towards actual installations.

We offer flexible working hours, a modern working environment and an opportunity to work with mini computers from a major manufacturer using an excellent software operating system. If you have a practical background of DEC machines we are interested in hearing from you. We are also willing to re-train other machine based real-time programmers onto DEC minis and for existing DEC programmers we can offer

opportunities to gain valuable training and practical experience of micro work using Intel 8085 and RCA Cosmac 1802. Salaries up to £7000 per annum depending on experience. Ring Walter Wilcox for an informal chat about the possibilities at Wokingham (0734) 790897 or (0483) 87082 after normal hours of Saturday.

wesdac

Wesdac Systems Limited, Culgate House, Stoke New, Wokingham, Berkshire

## MYRIAD

# SALES SUCCESS

The front-line sales role is one of the most demanding in any business, and in order to achieve success, the sales executive needs not only his own commitment and drive, but also the back-up of thorough product orientation and comprehensive technical and administration support. Our client is the market leader in its field. In itself this fact is a testimony not only to the unrivalled range of data-communications products which they offer, but also to the success of the sales force and the sales support effort, which leaves front-line sales personnel free to carry out their primary responsibility — opening up new accounts and maintaining existing clients.

To cope with the ever-increasing demand for its products the company is currently expanding its sales team and is able to offer a number of exceptional opportunities to both experienced salesmen, in territories throughout the South of England, and trainees.

**FIELD SALES:** The ideal candidate will have previous experience of selling data communications kit. However, a successful track record in any computer or electronics related field will also be relevant. A substantial basic salary is offered plus a bonus, generous commission scheme and company car. Commission will be guaranteed initially and the first year quota earnings are circa £8000 which one may confidently expect to exceed.

**SALES TRAINEES:** These are excellent opportunities for young persons with technical backgrounds i.e. electronics or micro-processor experience, or relevant academic achievements, i.e. 'A' Level/ONC Physics, who have the necessary flair and enthusiasm to move into a sales environment. Acting on their own initiative the persons appointed will be responsible for providing support to field salesmen, producing proposals and quotations and maintaining close links with existing clients. Successful candidates may look forward to a move into field sales after approximately eighteen months. An attractive starting salary plus bonus is offered circa £4500.

In a major organisation where sales, in real terms, have developed rapidly in recent years the persons appointed can look forward to a rewarding future where career opportunities are unlimited.

Ref. SW2/0802

MYRIAD APPOINTMENTS LIMITED  
30 Fleet Street London EC4Y 1AA  
01-353 0981 24 HRS.

## THE SALES AND MARKETING BIT

### FORECASTING—II

# A prediction, not a prophecy

FORECASTING is a prediction, not a prophecy, yet it cannot be truly regarded as an exact science. It is at best a conscientious, even heroic attempt to bring about an informed anticipation of future events, most of which are uncontrollable.

The creation of a meaningful sales forecast is not an overnight job. The sources of input are so many and so diverse that the physical effort involved demands an elapsed-time measured in weeks, even months.

There are many factors the sales forecast must take into account and these broadly fall into two categories — internal and external forces.

Let us consider some of these factors. **INTERNAL FACTORS** Existing and Known Potential Clients

By and large, this should be the most reliable element of the sales forecast, the portion of a known usage pattern. However, this is apparently so predictable that there is a great danger of assuming too much. There is only one

way of predicting the likely pattern of future business from an existing user base — go and ask them, everyone, individually! That's a job for the salesman.

"My company has asked me to make a forecast of probable business next year, Mr Customer, and I wonder if you could tell me if your present expenditure will continue and if you anticipate requirement for further systems/equipment during that period?"

Similarly with prospective clients, in order to establish a likely start date, the level of expenditure and the percentage chance of getting the business, it is usually best to exclude any such possibility which might be rated as less than optimistic. Depending on the duration of the typical selling-cycle the salesman might also attempt to make some reasonable estimation of that business, which could be generated and billed within the forecast period from sources unknown at the time of forecasting. In my experience such business always occurs, but is impossible to anticipate.

with any accuracy. It is therefore perhaps best to treat it as "gravy" and external to the forecast.

### Anticipated Losses

Maybe the company is about to lose some business in the coming year — a contract which has yet to come into effect has been signed with the competition, a service or product is to be discontinued, and so on. It is essential that the negatives be included in the forecast as well as the positives.

### Innovations and Special Promotions

Maybe the company is planning to launch a new product or products within the period of the sales forecast. What effect on revenue is anticipated? When will it occur?

Additional revenue from new product releases could be contained in a completely separate budget if the product concerned is significant enough, but that is seldom the case and never applies to special promotions.

### INTERNAL FACTORS Company Constraints Financial Implications

Company investment in the provision of resources is a key factor in revenue growth. Is the revenue projection for next year and potential business beyond the scope of present resources in the context of equipment, accommodation, etc? Does the company intend to modify the existing level of investment? Could the company's cash flow tolerate the nature of the predicted revenue, particularly for new ventures? Such factors must be considered very closely indeed.

### Production Capacity

"Maybe you could sell it, but could you supply it?" There is no point in allowing arrogance to overcome commonsense. If the company has a known finite production capacity including overtime, and does not intend either to subcontract or expand its facilities, then the sales forecast, by making allowances for the reality of lost or unavailable production, can never even be as high as 100 per cent of capacity.

### Personnel Resources

"Hobby-horse time! One of the tragedies of the computer industry is that as probably the fastest growing and successful industry of all and regularly achieving very significant profits (particularly for overseas investors) it should fall so abysmally to grow the people that are necessary to sustain the industry's own existence. This is particularly poignant at a time of high unemployment."

So sales and marketing people all — do involve every person and department who can influence the company's performance in the year ahead when producing a sales forecast. The best way to get people on your side is to get them involved and keep them informed.

The order of the day for many companies is "We don't have the time to train people this year, so let us steal someone else's employees until we get around to it!"

The effect of this situation can be quite profound on the sales forecast, particularly when it comes to the recruitment of salesmen. How does one get the business without the salesmen to sell it?

It is not unusual for computer companies to approach us in the summer to help them find the salesmen who should have been on board from January 1.

Pre- and post-sales analysts, applications programmers, operators, engineers and systems programmers equally have a profound effect on the ability to supply the goods and therefore make the revenue.

No sales forecast in these days of short-sightedness towards personnel development can disregard the availability of people.

### Trends within the Extending Revenue Base

History is often a blueprint for the future. There is therefore much to be gained from projecting those trends (say, the last 24 month period) against the completed forecast and noting the differences. At these are all serious incompatibilities, having removed any exceptions, then you may have got it wrong. Either way it is certainly a good discipline.

### Individual and Departmental Attitudes

There is one amorphous yet significant force which can affect the sales forecast and that is the attitude of all those people who are involved directly and indirectly with providing the service or product concerned. If they are opposed to a particular product, client, salesman, policy, strategy, promotion, etc then the effect on the resultant revenue can be enormous.

The best way of alienating such people, and thus promoting their disinterest or even opposition, is to disregard their knowledge and experience in the context of predicting what is likely to occur in the year ahead (or whatever period).

More next week!

TRADER

### Puzzle Answer



## INDEPENDENT COMPUTER ENGINEERING

Small, aggressive company specialising in the discontinuance, installation and failure changing of IBM 360 and 370 computer systems requires additional computer engineers to enable it to keep up with the increasing demand for its services in Europe.

Applicants must be fully experienced on IBM 370 CPUs and peripherals, capable of working without supervision in a demanding environment and willing to travel. In return we offer an excellent compensation package which includes a good salary, company car, profit sharing, life insurance and pension scheme.

Please apply, either by letter or telephone, to Martin Ash or Norman Brown at:

Court Farm Estate  
Northorland Close  
Stamwell  
Middlesex TW19 7LN  
Tel: Ashford (07842) 43749.

## Data Processing Co-ordinator

Snamprogetti, a major international contractor, one of the ENI Group of Companies, is restructuring its data processing facilities at its Basingstoke office, following a continued period of growth and expansion, and a Data Processing Co-ordinator is to be appointed to supervise this specialist function.

Applicants should have wide and comprehensive knowledge of data processing facilities, utilising IBM 370/158 and be capable of assisting management in initiating, extending and implementing commercial systems and applications.

The experience required should cover a minimum of two years in operation analysis, together with a good knowledge of PL/I language and job control language in OS system. A knowledge is also required in OS/VS1 or OS/MVS system architecture plus a knowledge of ASSEMBLER and FORTRAN language and remote job entry characteristics. Experience with an international contractor working for a UK subsidiary of an overseas company would be a distinct asset.

Very competitive conditions of employment include attractive negotiable salary, pension plan, full life and permanent health security cover, membership of BUPA and relocation expenses.

Applications, giving full career details including current salary should be addressed to: **Personnel Manager, Snamprogetti Limited, Snamprogetti House, Basing View, Basingstoke, Hampshire RG21 2YV.**

### HERTFORDSHIRE COUNTY COUNCIL HIGHWAYS DEPARTMENT



## PROGRAMMER/ ANALYST

SALARY £3852 TO £8180  
GRADE AP3/SO2  
POST No. EA64

**THE JOB**  
We offer you the opportunity to support and develop a variety of information systems providing essential data for the engineers and management of the Highways Department. You will join a small team under the direction of a Senior Analyst and participate in the design and implementation of new systems and the support of existing ones.

Applications which the department is presently engaged upon are: Traffic Accident Analysis, Traffic Counter Analysis, Structural Assessment, Road Inventory, Road Treatment Records, Staff Costing, Street Lighting Inventory, PERT, Highway Design and Transportation Modelling.

The present County Council computer is the latest NCR Criterion Mainframe, a 1M byte 8580 with large discs, last tapes and terminals. The computer offers virtual storage and interactive programming facilities. The department also uses a number of packages accessed via terminals at computer bureaux.

**THE PERSON**

You should have a good honours degree in either Computer Science or Civil Engineering with a computer background. Starting salary will be within the range £3852 to £8180 depending on post qualification experience.

For further information and application forms please phone Hertford 54242 extension 8023, or write to Alison Taylor, Goldings, North Road, Hertford.

Closing date: 23 February, 1979.

### THE GENERAL NURSING COUNCIL FOR ENGLAND AND WALES

## Senior Programmer

A programmer of some 2/4 years' experience is required. Must be capable of leading a small team of programmers in the maintenance of an existing batch record system but also with the skill to bring to fruition present system development leading to a major on-line record keeping system.

The main programming language presently used is COBOL with some PL/I and ASSEMBLER. Knowledge of IBM Job Control Language is essential.

The salary scale for this post is from £4,775 per annum, rising to £5,680 per annum inclusive of London Weighting. Luncheon vouchers of 25p per day are issued, and there is a good pension scheme in operation. The annual leave entitlement is 23 days plus 11 days for statutory holidays. The Council operates a flexi-time system on a 36-hour week.

Mr. Jelley, Computer and Records Officer, Extension 32, will be pleased to discuss this post with a suitable applicant prior to an interview being arranged.

Application forms are available from and interview arrangements can be made by contacting Miss R. J. Hutten, Personnel Officer, The General Nursing Council for England and Wales, 23 Portland Place, London W1A 1SA. Telephone: 01-580 8334, Extension 43.

### Central Public Health Laboratory National Collection of Type Cultures (N.C.T.C.)

## SYSTEMS DESIGNER/ PROGRAMMER

A systems designer/programmer, preferably a science graduate, is required for the operation of a bacterial identification service. Bacteria from clinical sources are identified by probabilistic analysis of test results by reference to computer stored data bases. Systems use Optical Mark Reader, Data Recognition (Barium) Machine, Ectal punch tape terminal control and the LUCS time sharing system. Current software is in FORTRAN IV. There is considerable scope for improving the efficiency of the system and the efficient storage and retrieval of data, and to improve the methodology of analysis and alternative methods. Sympathetic supervision would be given for specialist training if required. Grading dependent upon basic qualifications in appropriate subject and on experience.

Salary scales: Scientific, Probationary scale £2,991-£4,774; London Weighting (£354). Post Probationary scale £3,788-£4,889; London Weighting or Senior Scientific scale, if applicable, £5,451-£6,837; London Weighting NIS Designated scale £4,389-£5,025; London Weighting.

Ring 01-205 7041 for a more detailed job description (Dr. L. R. Hill, on Ext. 47) and for an application form (Personnel Officer, on Ext. 12) - Central Public Health Laboratory, Colindale Avenue, Colindale, London, N.W.9. Closing date: 18th February, 1979.

### THE LONDON HOSPITAL MEDICAL COLLEGE (University of London)

## COMPUTER PROGRAMMER

Applications are invited for the post of Programmer in the Computer Section from programmers with at least one year's experience.

The Computer Section provides an advisory and programming service to the staff and students of the Medical College.

A PDP 11/10 is used both as a local computer and as a terminal to the University Computer. Experience of using FORTRAN is essential. Knowledge of SPSS, BMD and PDP-11 assembler would be an advantage.

Salary will be at a point on either Programmer 18 Scale (£2,394-£5,004) or Programmer 1A Scale (£3,883-£5,855) + 2450 London Allowance per annum, according to qualifications and experience. Enquiries to Mr S. Evans, Tel. 01-377 2688.

Applications to The Secretary, The London Hospital Medical College, Turner Street, London E1 2AD, giving the names of two referees.

### THE CITY UNIVERSITY Department of Systems Science

## Experimental Officer

To assist with the interfacing and operation of a computer installation, Degree level qualifications experience of PDP-11 computers and microprocessors are desirable. The computer installation is in a laboratory which is used for research and teaching on computer controlled process, automatic inspection techniques, interactive design and interactive teaching programmes.

Salary will be in the range £3384 to £5804 per annum plus £450 per annum London Allowance.

Application forms may be obtained from Miss W. Millican-Hell on 01-283 4389, ext. 334, or write to The City University, Northampton Square, London EC1U 0AH.

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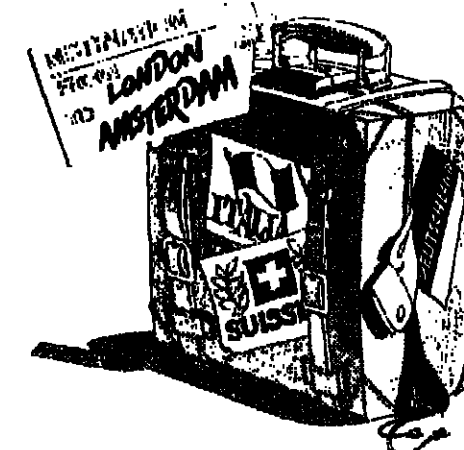
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For further details or advice on these or other U.K. and European contracts, call Sue Smyth, June Hogg or Jane Ashbury, KICOW on 01-491 4706 or 01-439 3411.



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Our client, currently retaining a large IBM 370, is seeking 5 persons to complement their modern computer complex, which at present utilises DOS VS, CICS VS and DL/1 database.

In addition, development has been planned on a mini computer system for distributed processing purposes. It is envisaged that the successful candidates will be involved in the design and programming of existing and new on-line systems on both mainframe and mini computers.

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